STAMSKI AND MCNARY, INC.
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*PRINCIPALS*
JOSEPH MARCH, P.E., P.L.S.
GEORGE DIMAKARAKOS, P.E.

*ASSOCIATE*
JONATHAN BOLLEN, P.L.S.

January 31, 2024

Stow Planning Board
380 Great Road
Stow, MA 01775

Re: **As-Built Plan Review**
Joanne Drive Subdivision

Members of the Board,
On behalf of our client, Kendall Homes, LLC., we have revised the As-Built plan for the referenced project, dated January 31, 2024. In response to comment made by Places Associates, Inc., in a letter to the board, dated December 20, 2023, we offer the following:

1. The current property owners' names should be shown in addition to the Lot numbers.
   **Owners names are now provided on the as-built plan.**
2. Please provide a volumetric comparison of the stormwater basin volumes by elevation as well as the volumes for the sediment forebays. The riprap texture makes the bottom contours illegible – please lighten the hatch and show the internal stone baffle defining the sediment forebays.
   **Volumetric comparison of the infiltration basins and sediment forebays between the proposed design and as-built condition are now provided on the as-built plan. The hatch of the riprap has been lightened to improve contour visibility. Internal baffle locations are now apparent via the as-built contours.**
3. All basins have deviations from the proposed outlet elevations (examples Basin 1, 6" orifices at 203.2 versus 203.5 proposed). The outlet pipe from the outlet structure in the cul-de-sac has a slope of 0.004, please confirm self cleansing velocity. Please run the drainage calculations using the as-built outlet and storage data to show compliance with the drainage calculations.
   **As-built drainage calculations have been provided and are attached hereto.**
4. Please include on the Engineers certification on the plan a statement that the drainage system in the as-built condition will function as designed based on as-built calculations.
   **The engineer's certification has been modified to include this statement.**
5. The outfall to Basin SMA-1 is in a basin created by a natural berm. Given the relatively flat slopes of the two inlet pipes, please add this area to the drainage calculations to make sure that ponding in this small basin does not have a deleterious effect on the basin and inlet.
   **Additional topographic information is now provided at the SMA-1 outfall. The natural berm is below the bottom of basin elevation, therefore the tailwater does not impact the drainage calculations for the basin.**
6. Several street trees near the stop sign on Forrest Road are not shown on the as-built. The tree near the mailboxes has damaged bark and may need replacement in the spring prior to street acceptance.
   **The missing street trees have been located and are now shown.**
7. Street trees shown comply with the agreed upon locations with the Planning Board. The office did not include the wetlands replication in our review as the Conservation Agents have been regularly inspecting this site.
   **No response needed.**

8. The outlet structures in the vicinity of the cul-de-sac indicate 5” orifices in the as-built, 4” were proposed. Please verify the size.
   **The orifice diameters have been re-measured and confirmed as 5”. The as-built diameters have been used in the as-built drainage calculations.**
9. Most of the monuments shown on the plan were easily visible on the site walk. Some of the monuments (mostly in grass areas) were not visible on this site walk but were visible on previous site walks so this is not a concern.
   **No response needed.**

We thank you for your attention to this matter. If you have any questions regarding this matter, please feel free to contact our office.

Respectfully,
Stamski and McNary, Inc.

Paul Kirchner, E.I.T.

George Dimakarakos, P.E.

# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

| 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 | 0.000 | 2 | n/a | 0 | ---- | ------ | ------ | E1 |
| 2 | SCS Runoff | 0.514 | 2 | 742 | 3,880 | ---- | ------ | ------ | E2 |
| 3 | SCS Runoff | 0.020 | 2 | 1336 | 514 | ---- | ------ | ------ | E3 |
| 4 | Combine | 0.514 | 2 | 742 | 4,394 | 2, 3 | ------ | ------ | Total to Onsite |
| 6 | SCS Runoff | 14.12 | 2 | 740 | 75,773 | ---- | ------ | ------ | Offsite to Exist 15-inch Culvert |
| 7 | SCS Runoff | 6.390 | 2 | 732 | 29,174 | ---- | ------ | ------ | Town Drain Outlet to PL |
| 8 | Combine | 20.47 | 2 | 736 | 108,827 | 2, 6, 7 | ------ | ------ | Total to 15 inch culvert |
| 10 | SCS Runoff | 0.000 | 2 | n/a | 0 | ---- | ------ | ------ | P1 |
| 11 | Reservoir | 0.000 | 2 | n/a | 0 | 10 | 195.00 | 0.000 | WQ Swale(SMA-6) |
| 12 | SCS Runoff | 0.149 | 2 | 734 | 1,114 | ---- | ------ | ------ | P2 |
| 13 | SCS Runoff | 0.084 | 2 | 768 | 1,765 | ---- | ------ | ------ | P3 |
| 14 | SCS Runoff | 0.200 | 2 | 724 | 673 | ---- | ------ | ------ | P4 |
| 15 | Reservoir | 0.000 | 2 | 448 | 0 | 14 | 0.79 | 107 | Roof Drywell Lot 7 |
| 16 | SCS Runoff | 0.828 | 2 | 734 | 4,092 | ---- | ------ | ------ | P5 (To SMA-1) |
| 17 | Reservoir | 0.000 | 2 | 814 | 0 | 16 | 202.00 | 1,065 | SMA-1 |
| 18 | SCS Runoff | 0.120 | 2 | 746 | 1,111 | ---- | ------ | ------ | P6 (To SMA-2) |
| 19 | Reservoir | 0.000 | 2 | 744 | 0 | 18 | 196.25 | 183 | SMA-2 |
| 20 | SCS Runoff | 0.682 | 2 | 728 | 2,927 | ---- | ------ | ------ | P7 (SMA-3) |
| 21 | Reservoir | 0.000 | 2 | 990 | 0 | 20 | 190.26 | 775 | (SMA-3) |
| 22 | SCS Runoff | 0.104 | 2 | 744 | 1,068 | ---- | ------ | ------ | P8 (SMA-4) |
| 23 | Reservoir | 0.000 | 2 | 1074 | 0 | 22 | 184.36 | 156 | (SMA-4) |
| 24 | SCS Runoff | 0.358 | 2 | 728 | 1,798 | ---- | ------ | ------ | P9 (To SMA-5) |
| 25 | Reservoir | 0.000 | 2 | 738 | 0 | 24 | 184.19 | 347 | (SMA-5) |
| 26 | Combine | 0.149 | 2 | 734 | 1,114 | 12, 17, | ------ | ------ | Prior to Crossing |
| 27 | Combine | 0.000 | 2 | 1264 | 0 | 19, 21, 23, 25, | ------ | ------ | Basins 2,3,4 & 5 |
| 28 | Combine | 0.157 | 2 | 746 | 2,878 | 13, 15, 26, 27 | ------ | ------ | Total to Onsite |
| 30 | Combine | 20.16 | 2 | 736 | 106,061 | 6, 7, 12, | ------ | ------ | Post to Open Box Culvert |

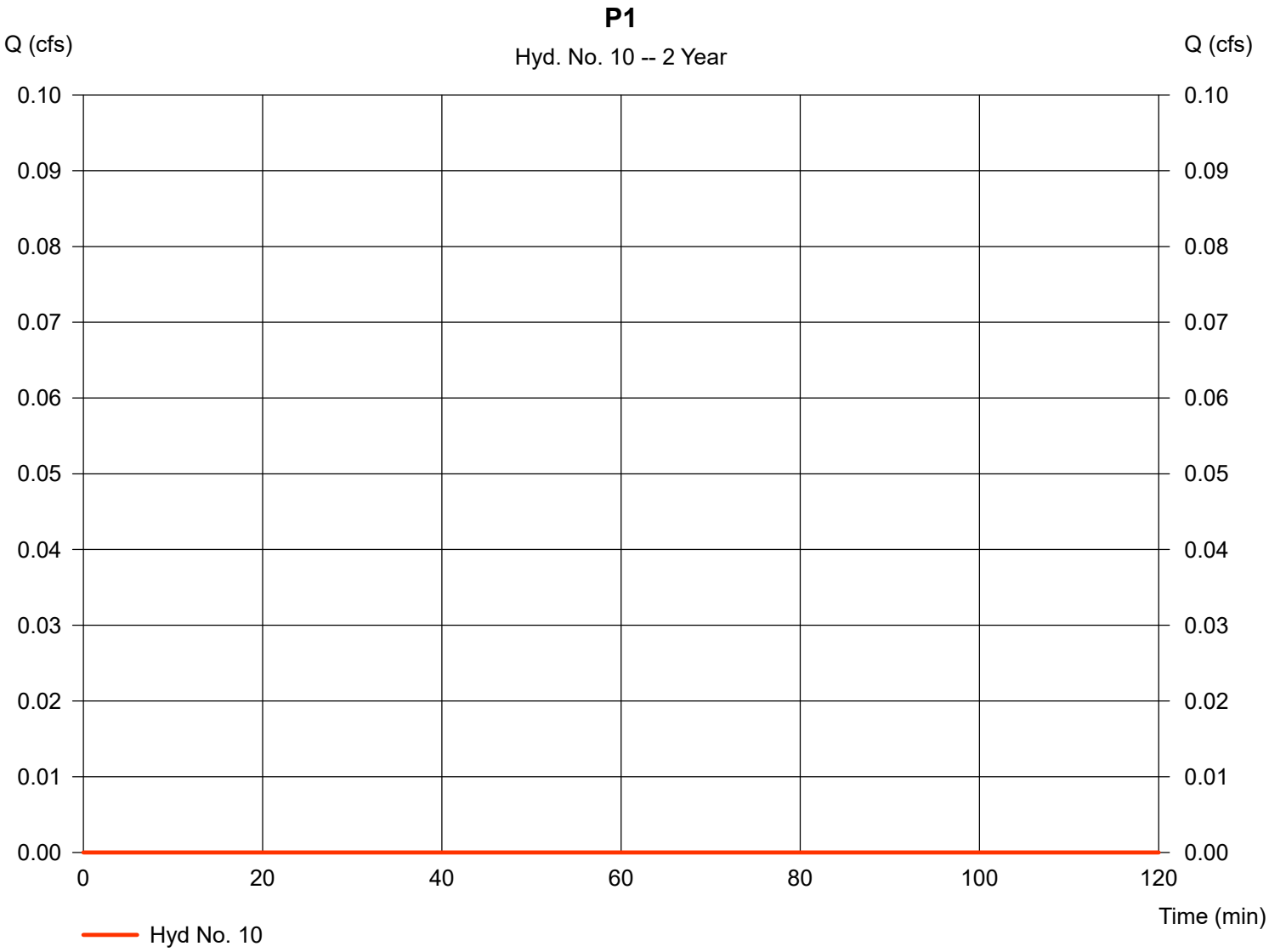
# Hydrograph Report



## Hyd. No. 10

P1

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | n/a |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Drainage area | = | 1.060 ac | Curve number | = | 38 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 18.80 min |
| Total precip. | = | 3.10 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

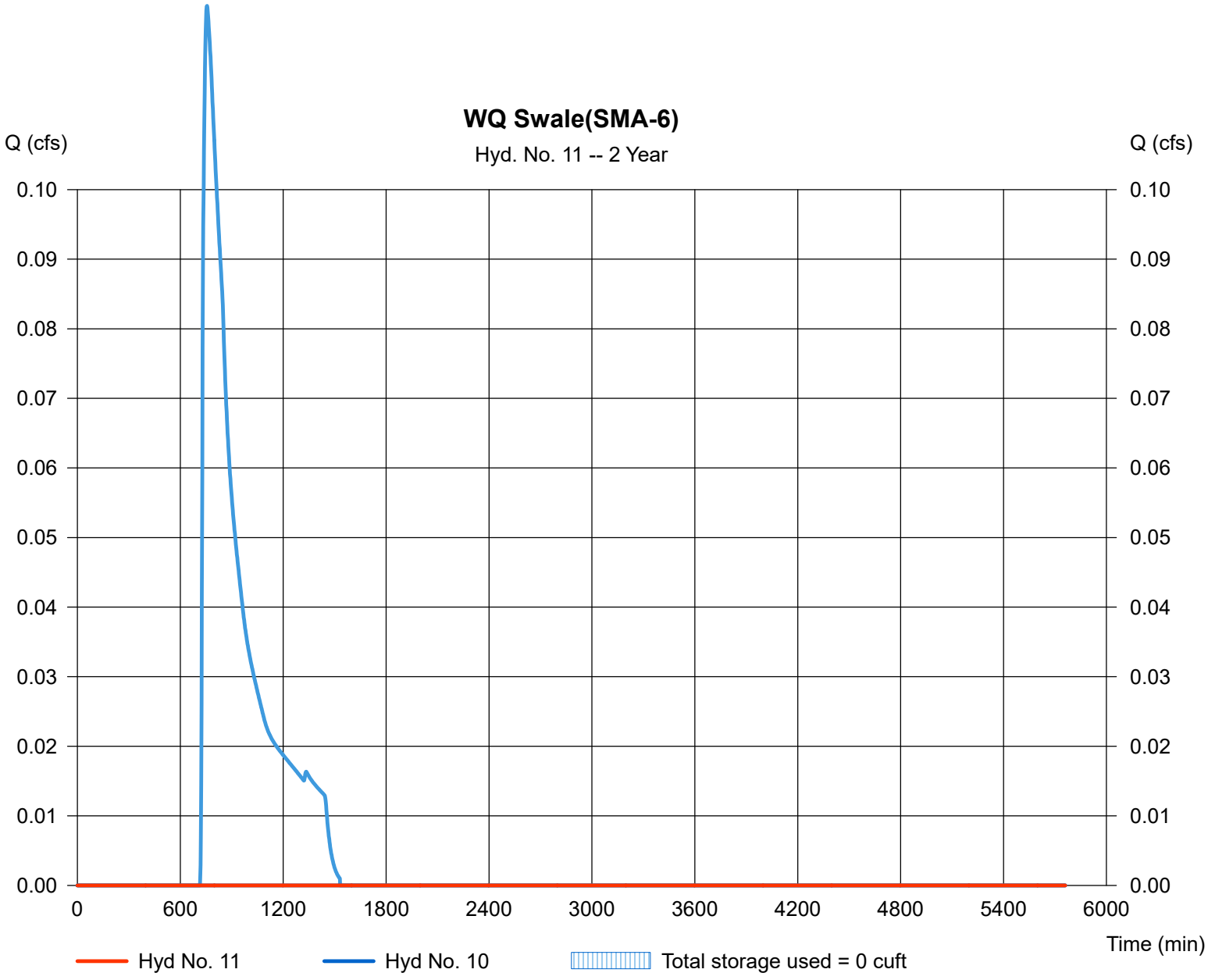


## Hyd. No. 11

WQ Swale(SMA-6)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | n/a |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Inflow hyd. No. | = | 10 - P1 | Max. Elevation | = | 195.00 ft |
| Reservoir name | = | WQS (SMA-6) | Max. Storage | = | 0 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 6 - WQS (SMA-6)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 195.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 195.00 | 378 | 0 | 0 |
| 1.00 | 196.00 | 692 | 527 | 527 |
| 2.00 | 197.00 | 1,109 | 892 | 1,419 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Span (in)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **No. Barrels** | = 0 | 0 | 0 | 0 |
| **Invert El. (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Length (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 0.00 | 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 | No | No | No |

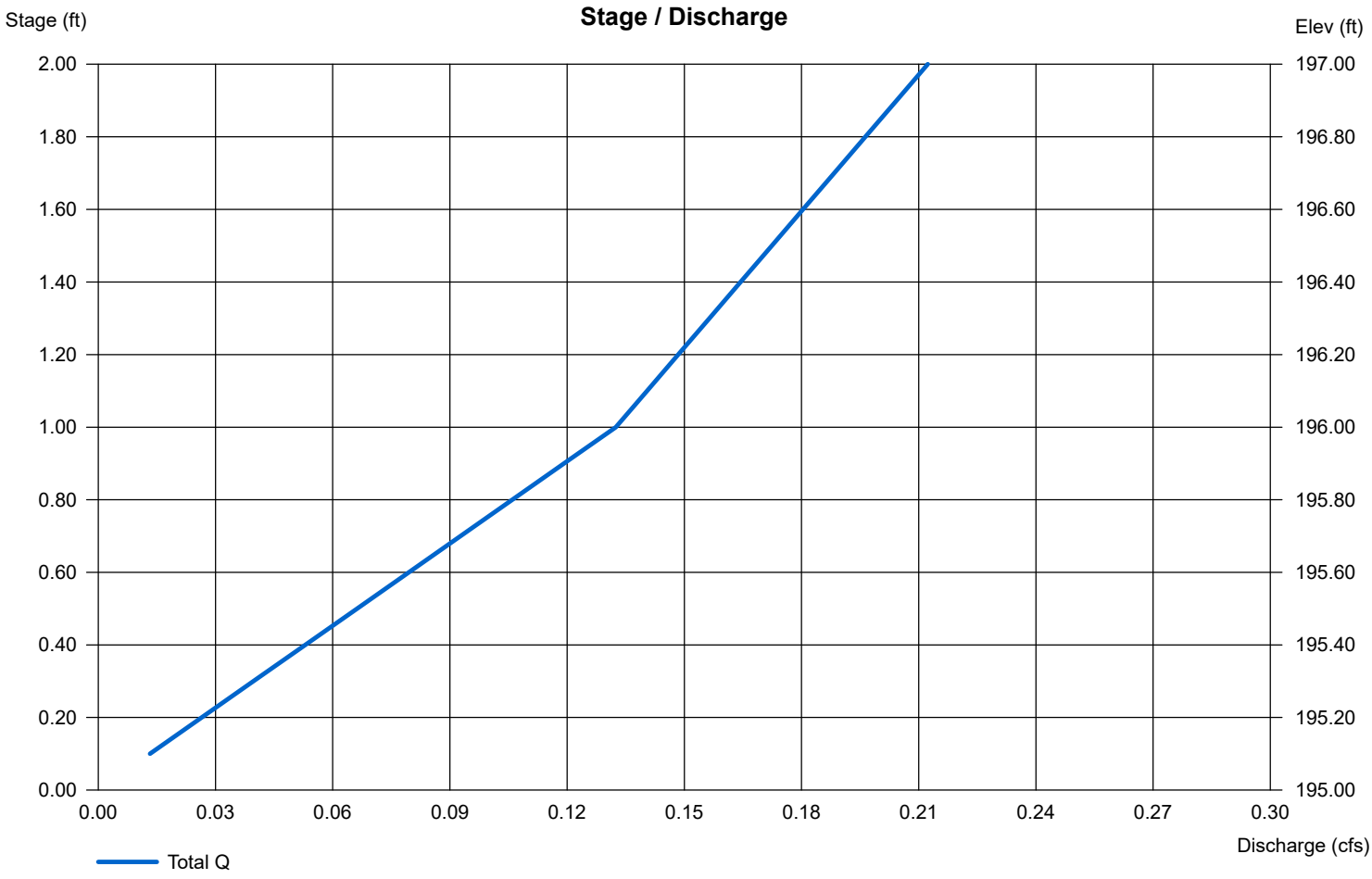
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 4.00 | 0.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 197.00 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 2.60 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = Broad | --- | --- | --- |
| **Multi-Stage** | = No | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



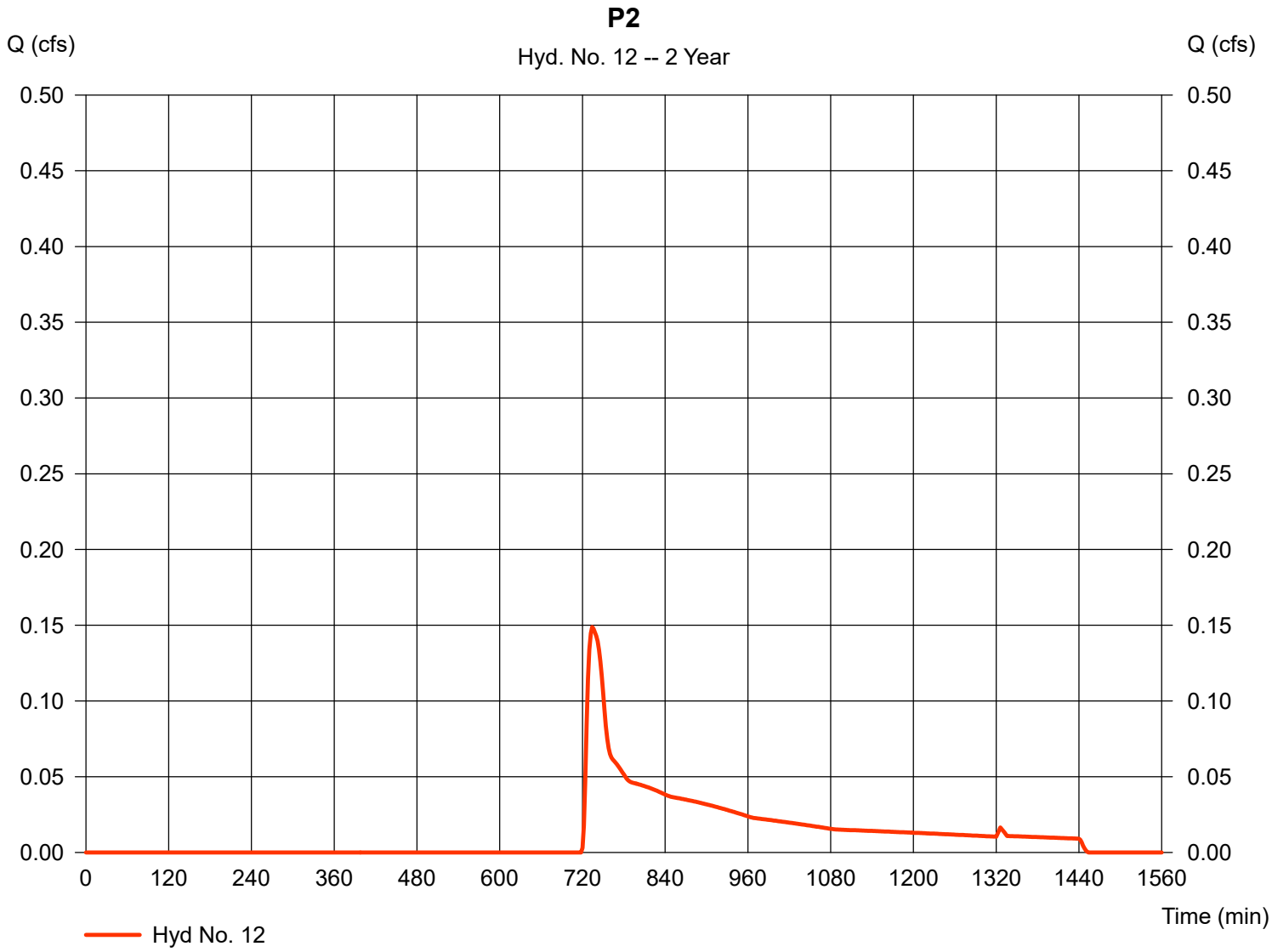
# Hydrograph Report



## Hyd. No. 12

P2

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.149 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 734 min |
| Time interval | = | 2 min | Hyd. volume | = | 1,114 cuft |
| Drainage area | = | 1.010 ac | Curve number | = | 57.9 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 9.60 min |
| Total precip. | = | 3.10 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report



## Hyd. No. 13

P3

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.084 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 768 min |
| Time interval | = | 2 min | Hyd. volume | = | 1,765 cuft |
| Drainage area | = | 3.660 ac | Curve number | = | 51.3 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 24.70 min |
| Total precip. | = | 3.10 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |

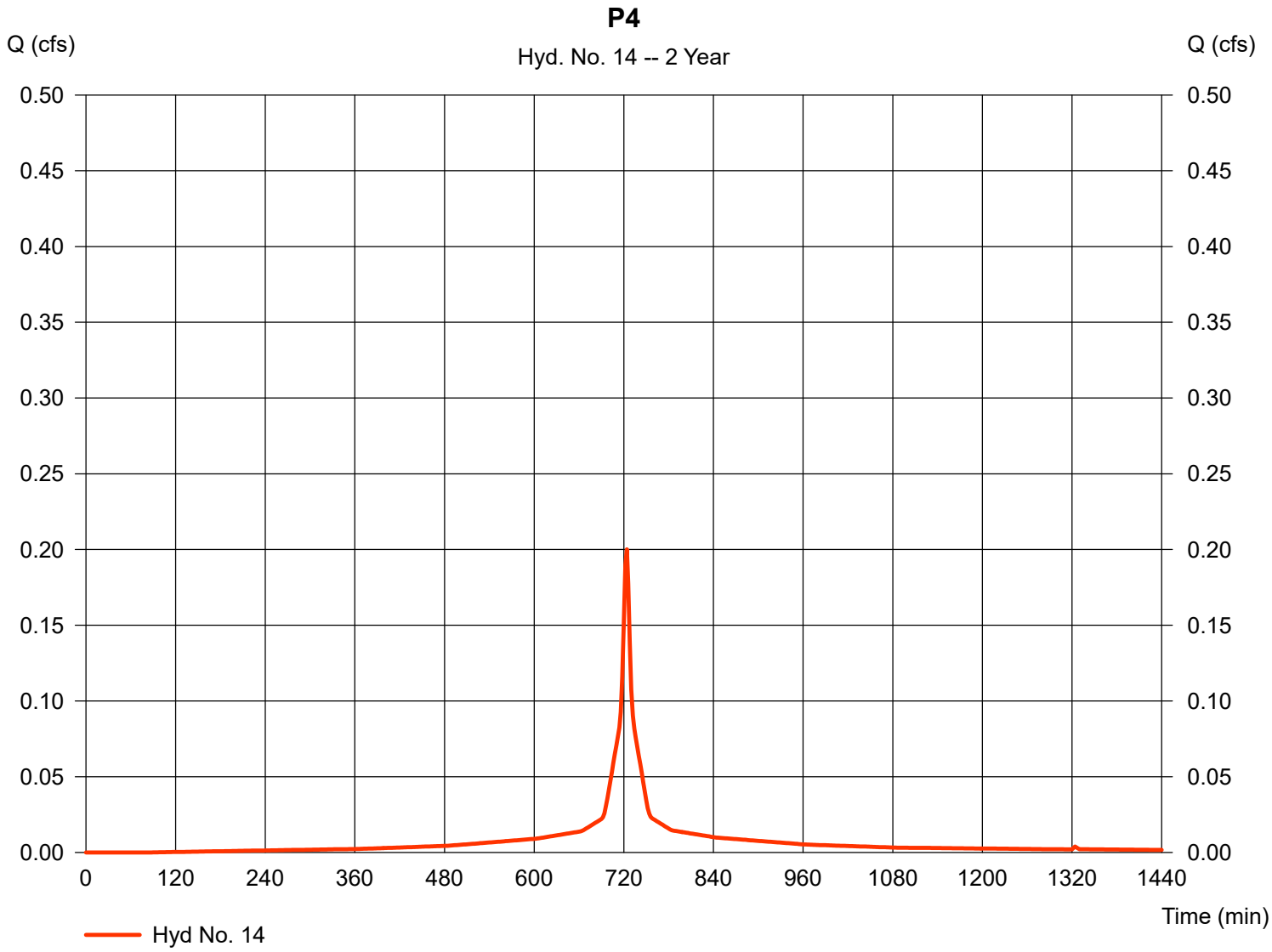
# Hydrograph Report



## Hyd. No. 14

P4

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.200 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 724 min |
| Time interval | = | 2 min | Hyd. volume | = | 673 cuft |
| Drainage area | = | 0.069 ac | Curve number | = | 98 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 6.00 min |
| Total precip. | = | 3.10 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

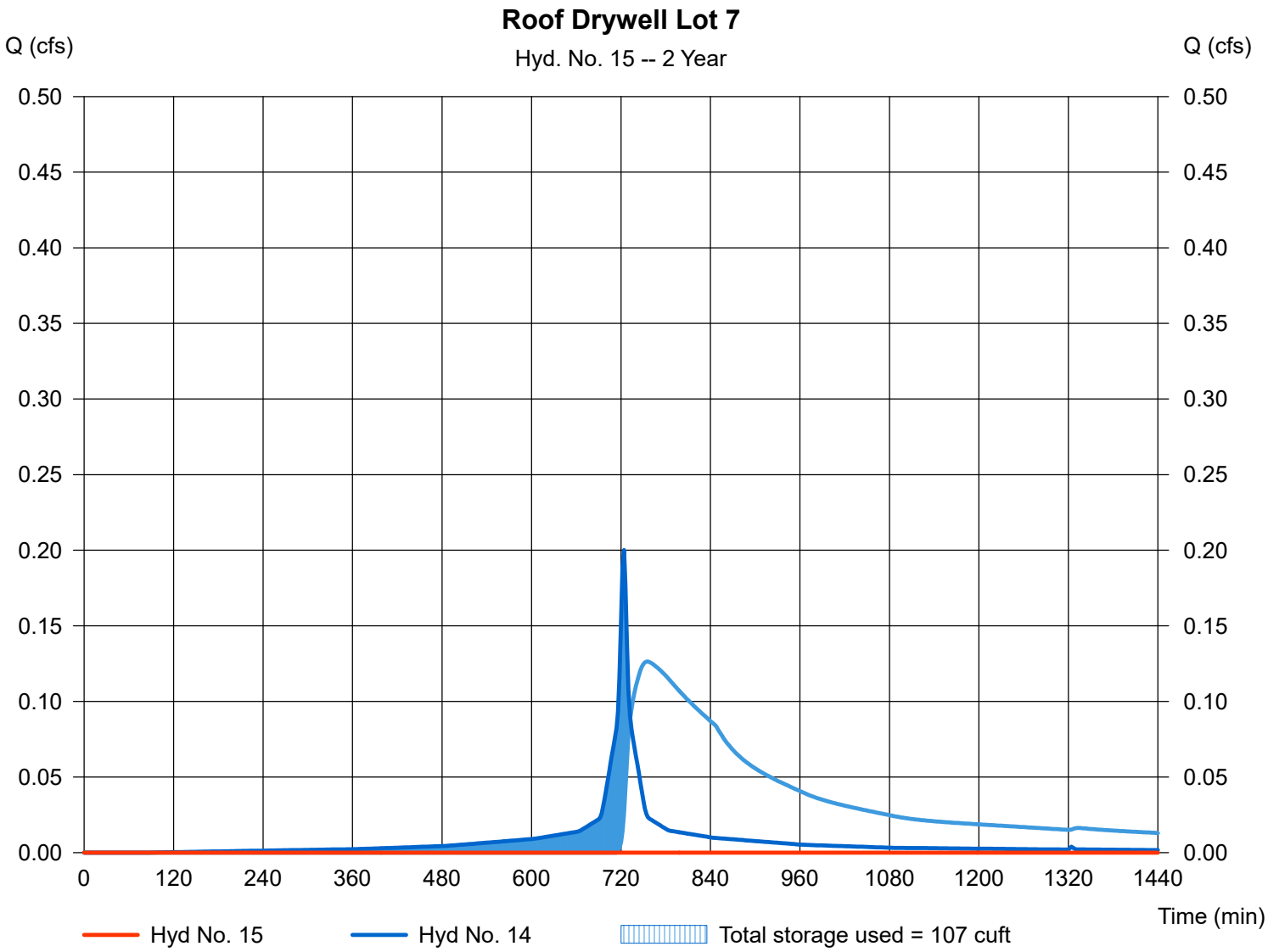


## Hyd. No. 15

Roof Drywell Lot 7

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 448 min |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Inflow hyd. No. | = | 14 - P4 | Max. Elevation | = | 0.79 ft |
| Reservoir name | = | SC-310 Drywell | Max. Storage | = | 107 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



## Pond No. 9 - SC-310 Drywell

### Pond Data

**UG Chambers -** Invert elev. = 0.50 ft, Rise x Span = 1.33 x 2.83 ft, Barrel Len = 21.35 ft, No. Barrels = 3, Slope = 0.00%, Headers = No
**Encasement -** Invert elev. = 0.01 ft, Width = 3.83 ft, Height = 2.50 ft, Voids = 40.00%

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 0.01 | n/a | 0 | 0 |
| 0.25 | 0.26 | n/a | 25 | 25 |
| 0.50 | 0.51 | n/a | 26 | 50 |
| 0.75 | 0.76 | n/a | 52 | 102 |
| 1.00 | 1.01 | n/a | 51 | 152 |
| 1.25 | 1.26 | n/a | 48 | 201 |
| 1.50 | 1.51 | n/a | 45 | 245 |
| 1.75 | 1.76 | n/a | 38 | 284 |
| 2.00 | 2.01 | n/a | 26 | 310 |
| 2.25 | 2.26 | n/a | 25 | 334 |
| 2.50 | 2.51 | n/a | 25 | 359 |

### Culvert / Orifice Structures

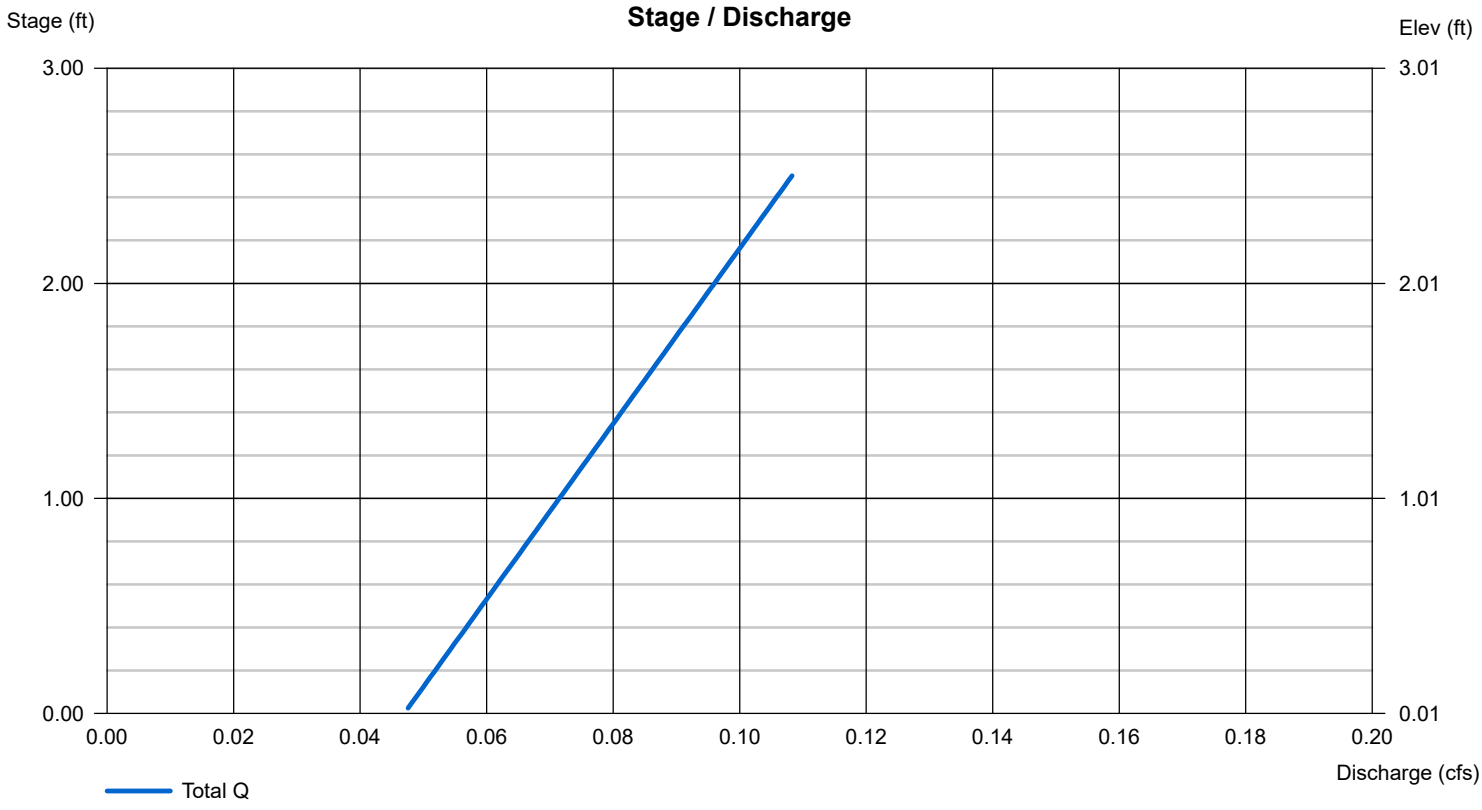
| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Span (in)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **No. Barrels** | = 0 | 0 | 0 | 0 |
| **Invert El. (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Length (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 0.00 | 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 | No | No | No |

### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = --- | --- | --- | --- |
| **Multi-Stage** | = No | No | No | No |

**Exfil.(in/hr)** = 8.270 (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).



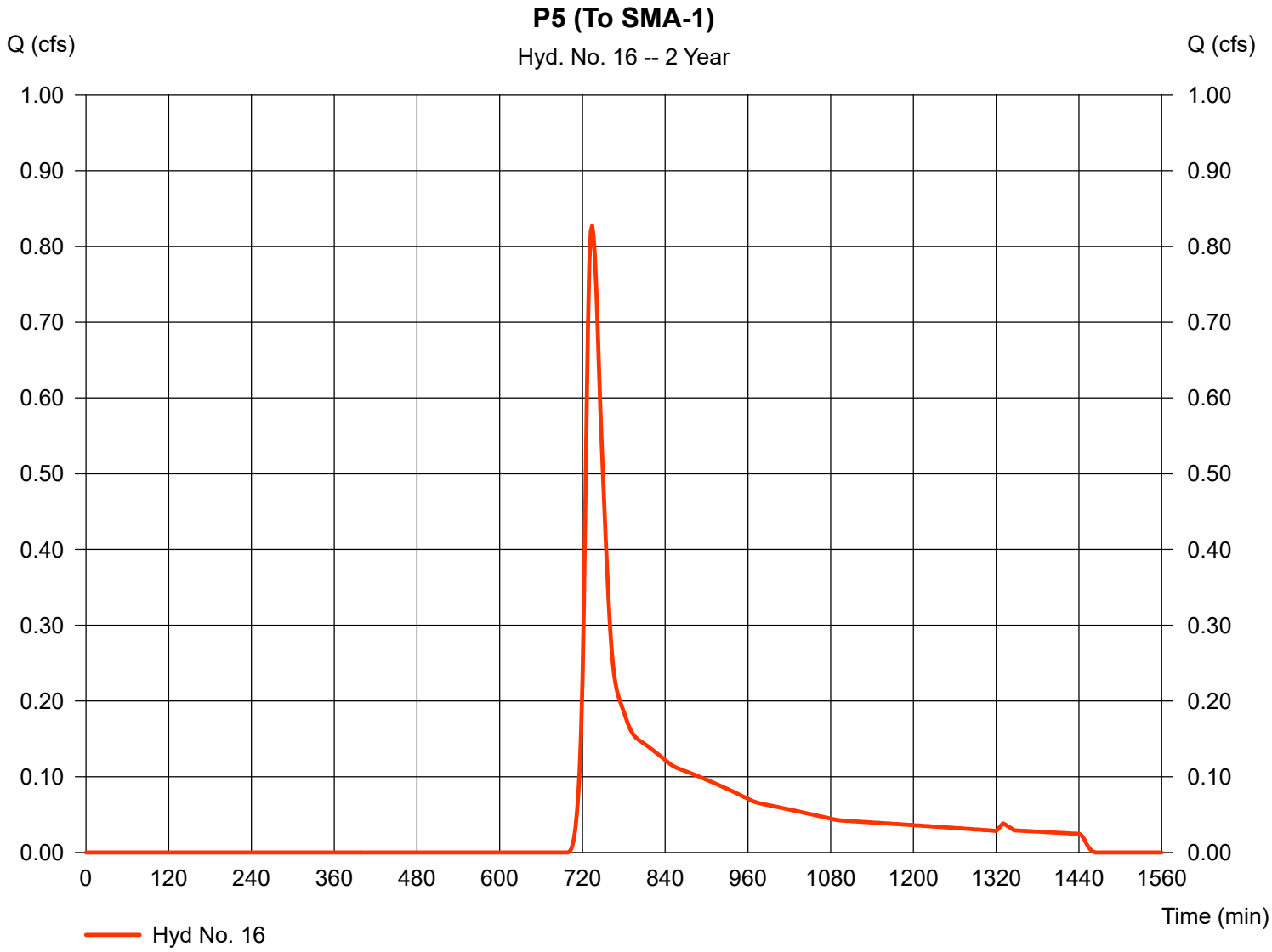
# Hydrograph Report



## Hyd. No. 16

P5 (To SMA-1)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.828 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 734 min |
| Time interval | = | 2 min | Hyd. volume | = | 4,092 cuft |
| Drainage area | = | 1.820 ac | Curve number | = | 67 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 15.80 min |
| Total precip. | = | 3.10 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

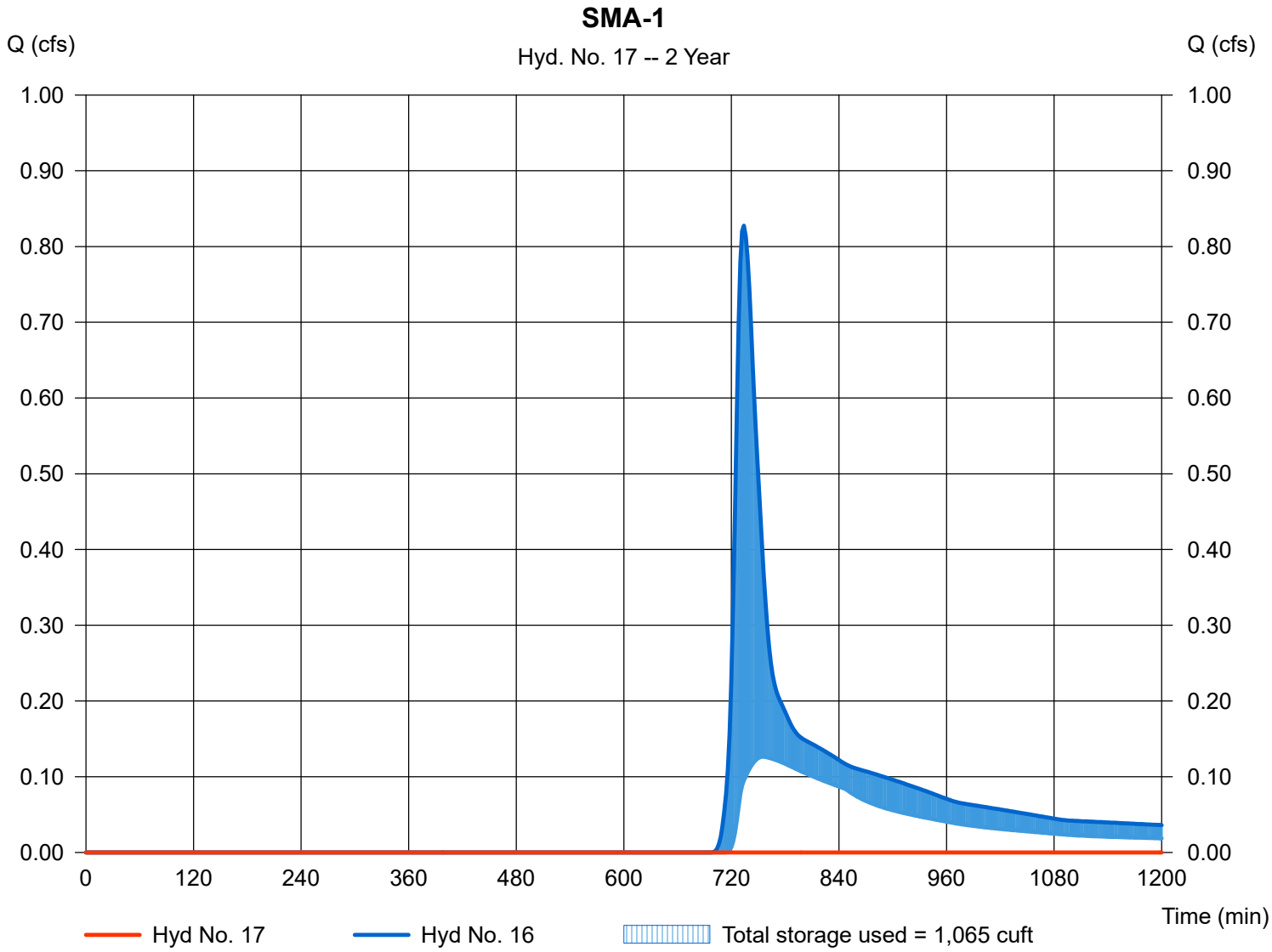


## Hyd. No. 17

SMA-1

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 814 min |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Inflow hyd. No. | = | 16 - P5 (To SMA-1) | Max. Elevation | = | 202.00 ft |
| Reservoir name | = | Inf. Basin (SMA-1) | Max. Storage | = | 1,065 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 8 - Inf. Basin (SMA-1)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 201.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 201.00 | 768 | 0 | 0 |
| 1.00 | 202.00 | 1,386 | 1,062 | 1,062 |
| 2.00 | 203.00 | 2,337 | 1,841 | 2,903 |
| 3.00 | 204.00 | 3,131 | 2,724 | 5,627 |
| 4.00 | 205.00 | 3,473 | 3,300 | 8,927 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 4.00 | 6.00 | 0.00 |
| **Span (in)** | = 12.00 | 4.00 | 6.00 | 0.00 |
| **No. Barrels** | = 1 | 1 | 3 | 0 |
| **Invert El. (ft)** | = 199.96 | 202.40 | 203.20 | 0.00 |
| **Length (ft)** | = 55.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 1.70 | 0.00 | 0.00 | n/a |
| **N-Value** | = .012 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | Yes | Yes | No |

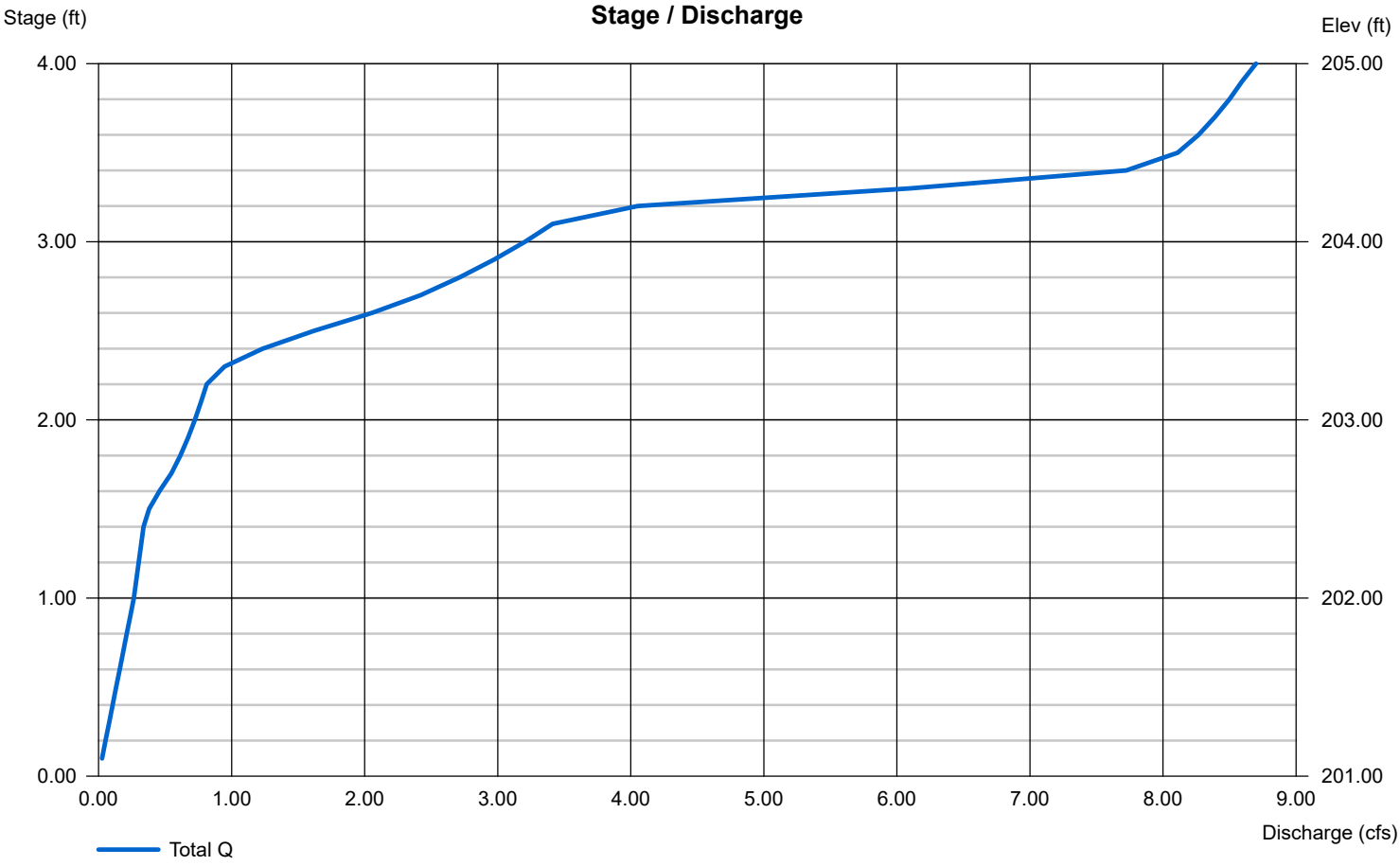
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 204.15 | 205.25 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 2.60 | 3.33 | 3.33 |
| **Weir Type** | = Riser | Broad | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



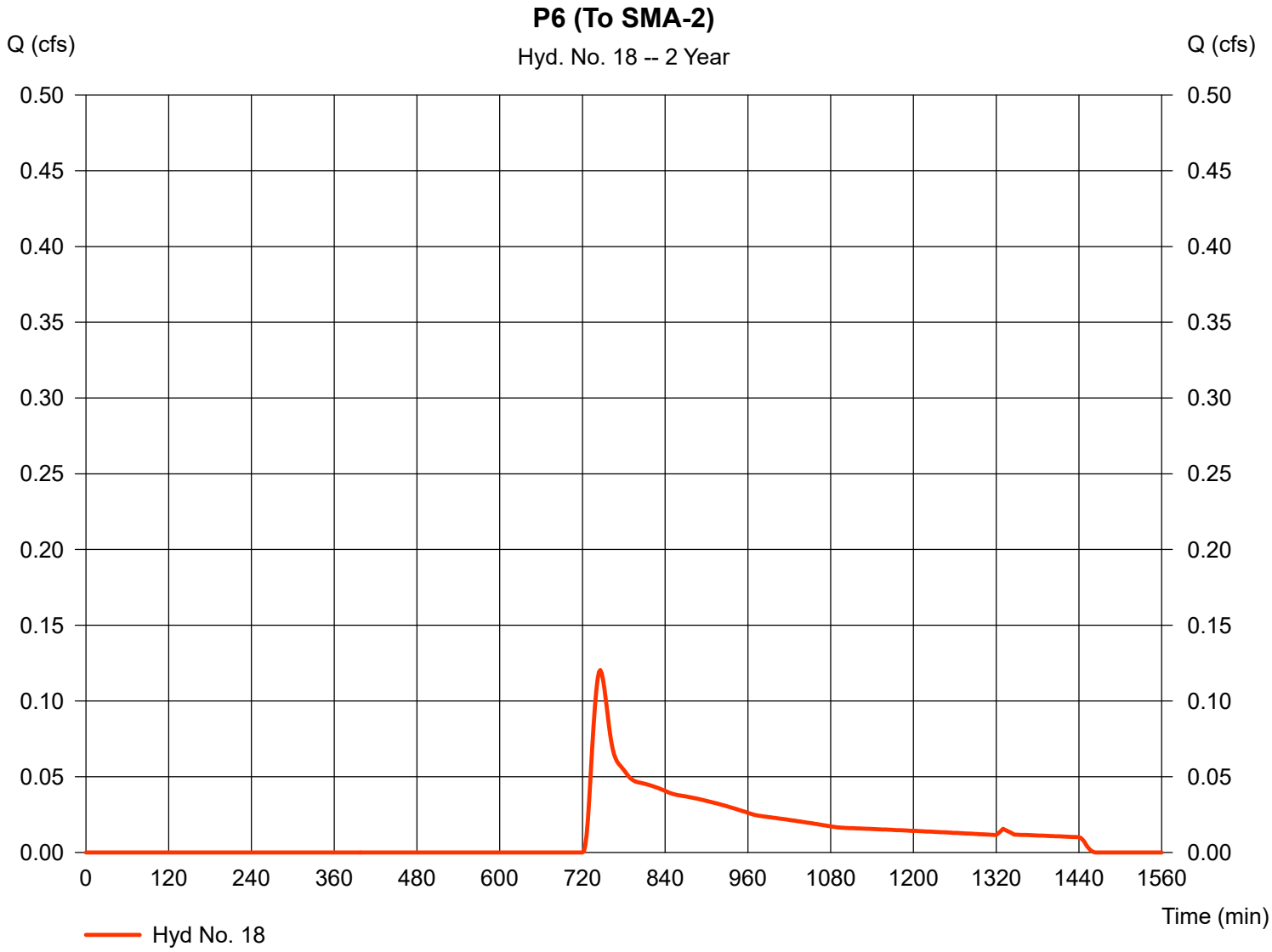
# Hydrograph Report



## Hyd. No. 18

P6 (To SMA-2)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.120 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 746 min |
| Time interval | = | 2 min | Hyd. volume | = | 1,111 cuft |
| Drainage area | = | 1.290 ac | Curve number | = | 55.8 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 16.40 min |
| Total precip. | = | 3.10 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

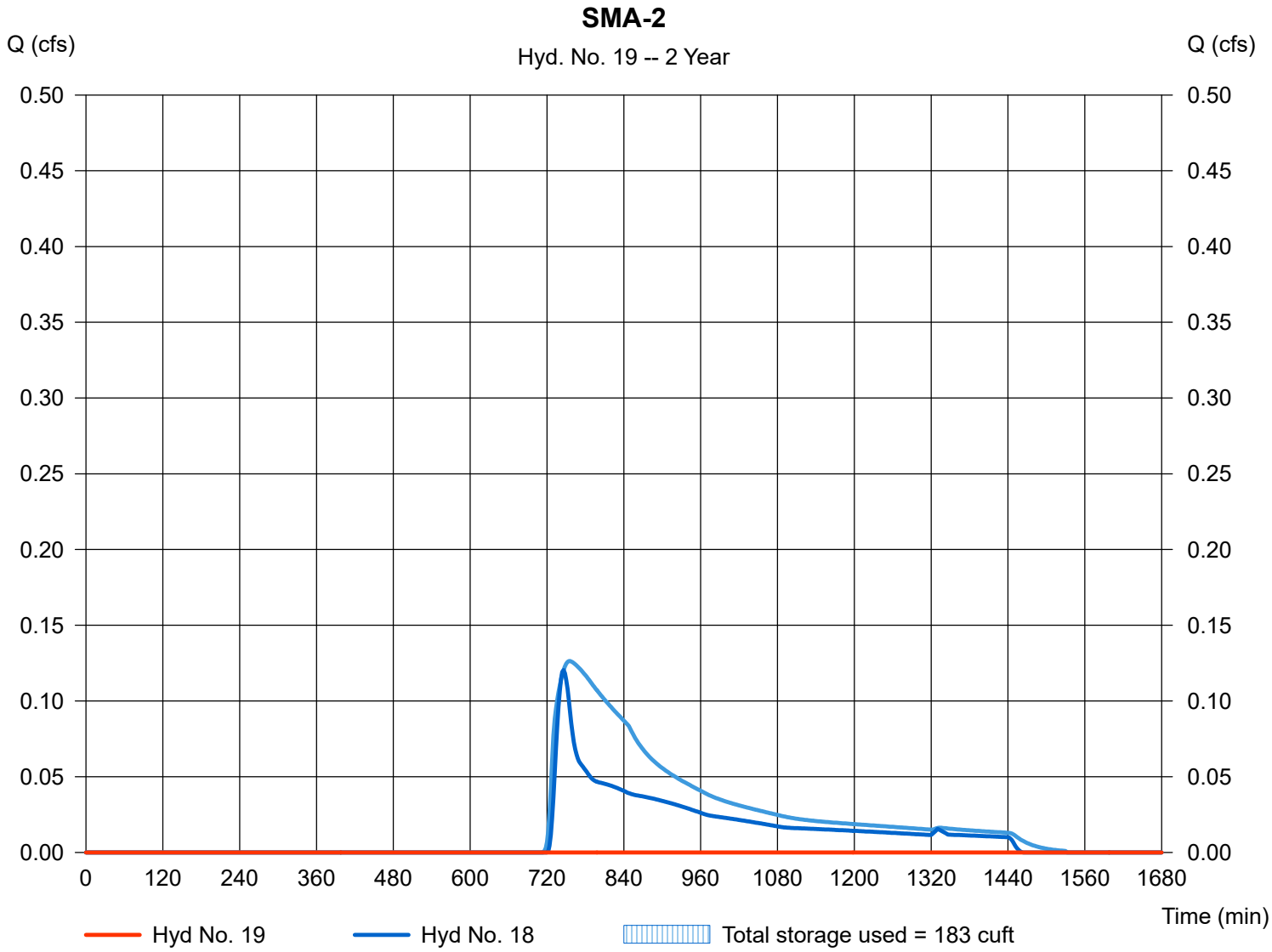


## Hyd. No. 19

SMA-2

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 744 min |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Inflow hyd. No. | = | 18 - P6 (To SMA-2) | Max. Elevation | = | 196.25 ft |
| Reservoir name | = | Inf. Basin (SMA-2) | Max. Storage | = | 183 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 1 - Inf. Basin (SMA-2)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 196.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 196.00 | 553 | 0 | 0 |
| 1.00 | 197.00 | 922 | 730 | 730 |
| 2.00 | 198.00 | 1,357 | 1,132 | 1,862 |
| 3.00 | 199.00 | 2,775 | 2,024 | 3,886 |
| 4.00 | 200.00 | 3,494 | 3,127 | 7,013 |
| 5.00 | 201.00 | 6,124 | 4,747 | 11,761 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **Span (in)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 3 | 0 | 0 |
| **Invert El. (ft)** | = 195.46 | 198.01 | 0.00 | 0.00 |
| **Length (ft)** | = 22.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 6.00 | 0.00 | 0.00 | n/a |
| **N-Value** | = .012 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | Yes | No | No |

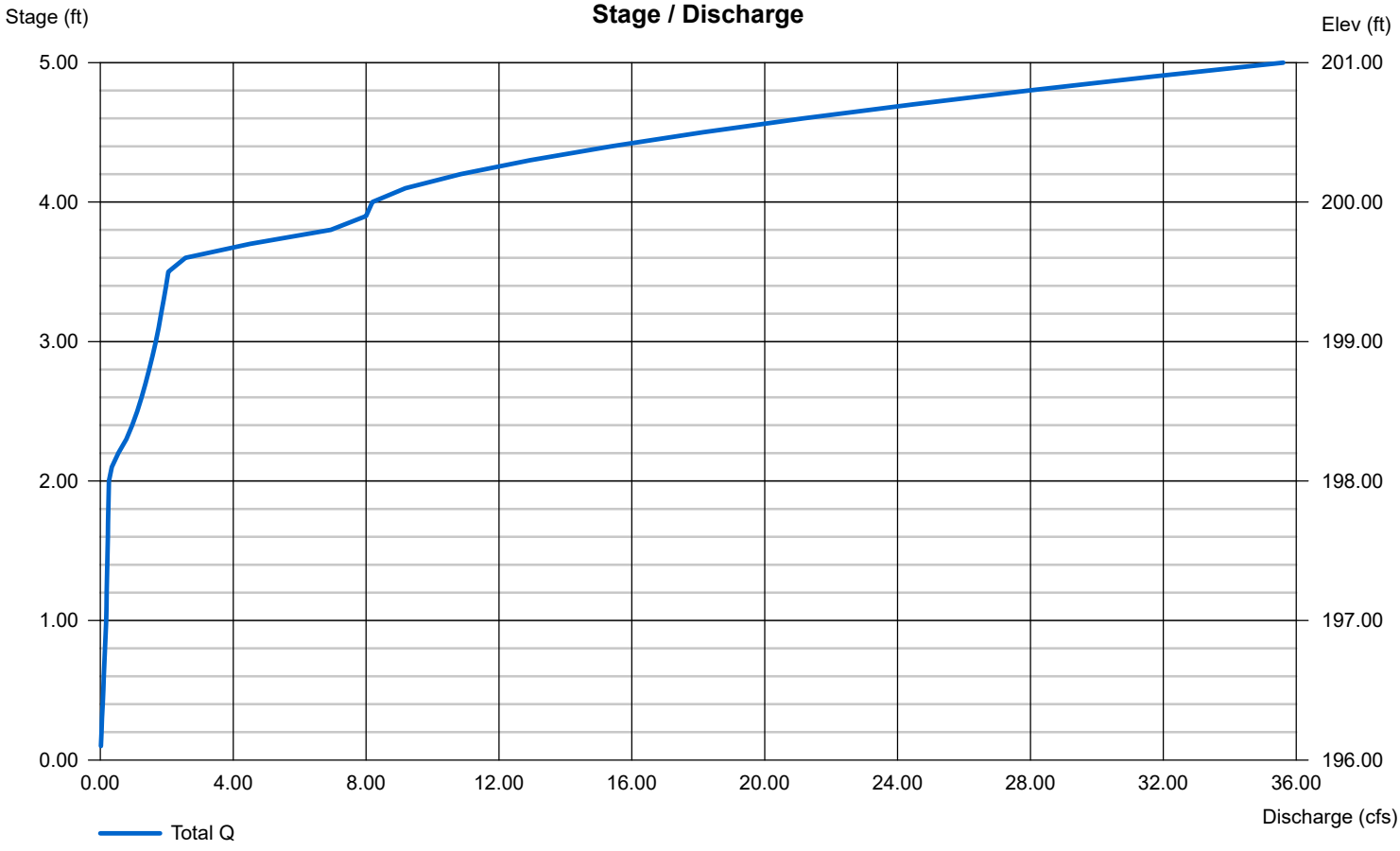
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | 10.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 199.55 | 200.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 2.60 | 3.33 | 3.33 |
| **Weir Type** | = Riser | Broad | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.240 (by Contour)

**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).



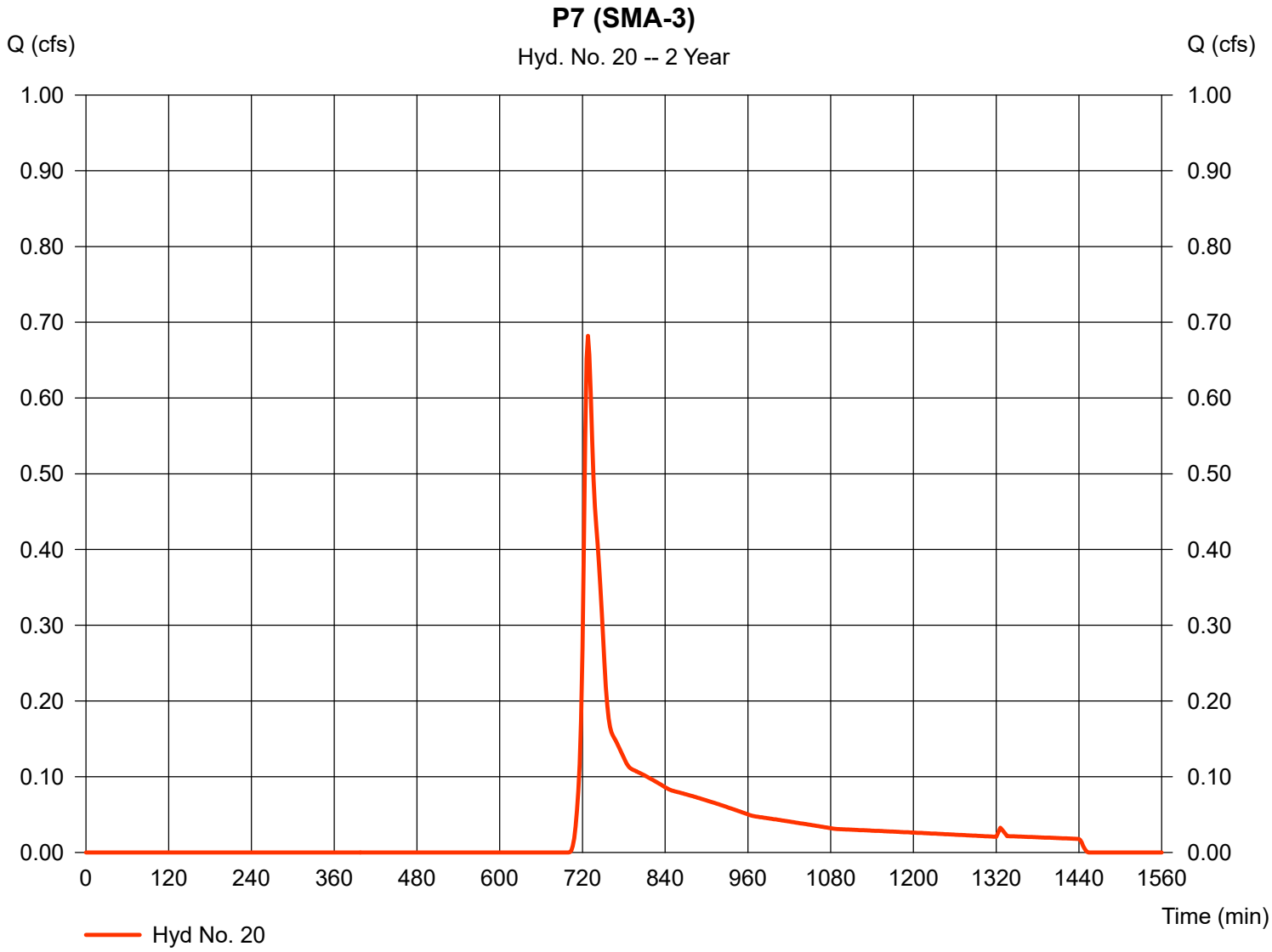
# Hydrograph Report



## Hyd. No. 20

P7 (SMA-3)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.682 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 728 min |
| Time interval | = | 2 min | Hyd. volume | = | 2,927 cuft |
| Drainage area | = | 1.350 ac | Curve number | = | 66.1 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 9.20 min |
| Total precip. | = | 3.10 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

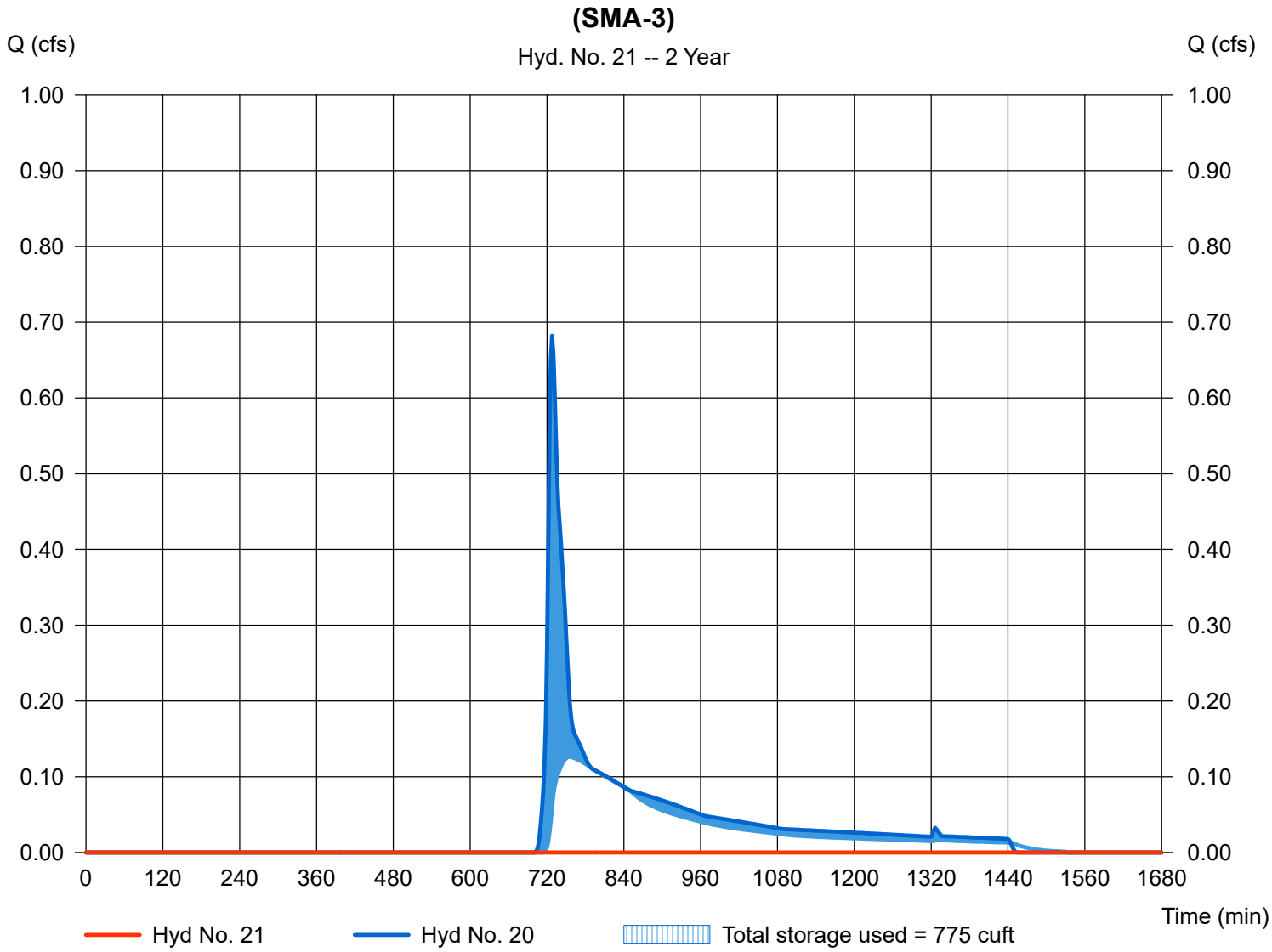


## Hyd. No. 21

(SMA-3)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 990 min |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Inflow hyd. No. | = | 20 - P7 (SMA-3) | Max. Elevation | = | 190.26 ft |
| Reservoir name | = | Inf. Basin (SMA-3) | Max. Storage | = | 775 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 2 - Inf. Basin (SMA-3)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 190.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 190.00 | 2,526 | 0 | 0 |
| 1.00 | 191.00 | 3,423 | 2,963 | 2,963 |
| 2.00 | 192.00 | 5,063 | 4,216 | 7,179 |
| 3.00 | 193.00 | 5,904 | 5,478 | 12,656 |
| 4.00 | 194.00 | 6,811 | 6,351 | 19,008 |
| 5.00 | 195.00 | 7,847 | 7,322 | 26,330 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **Span (in)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 2 | 0 | 0 |
| **Invert El. (ft)** | = 188.92 | 190.96 | 0.00 | 0.00 |
| **Length (ft)** | = 45.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 2.00 | 0.00 | 0.00 | n/a |
| **N-Value** | = .012 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | Yes | No | No |

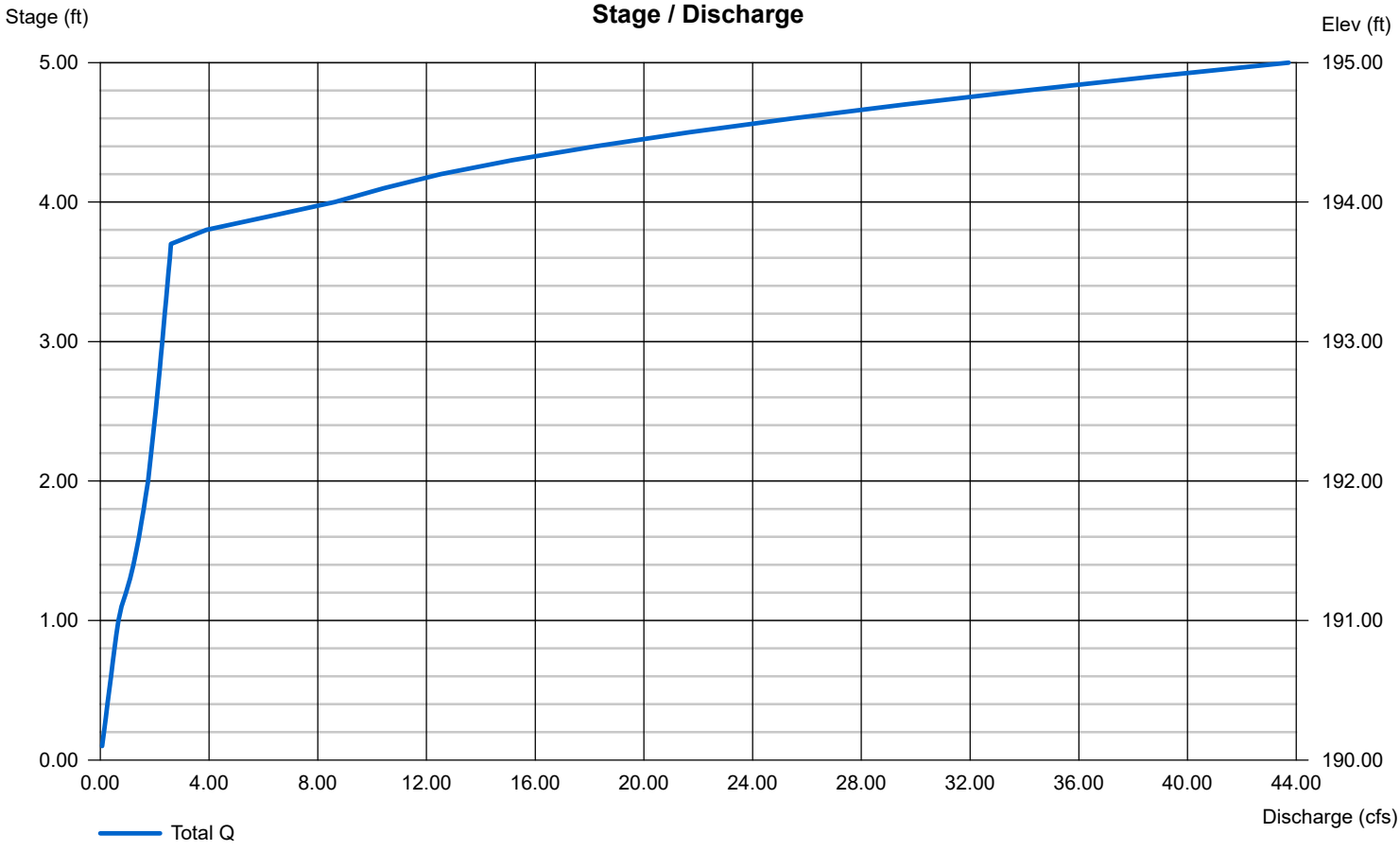
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | 10.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 193.70 | 194.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = Riser | Broad | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



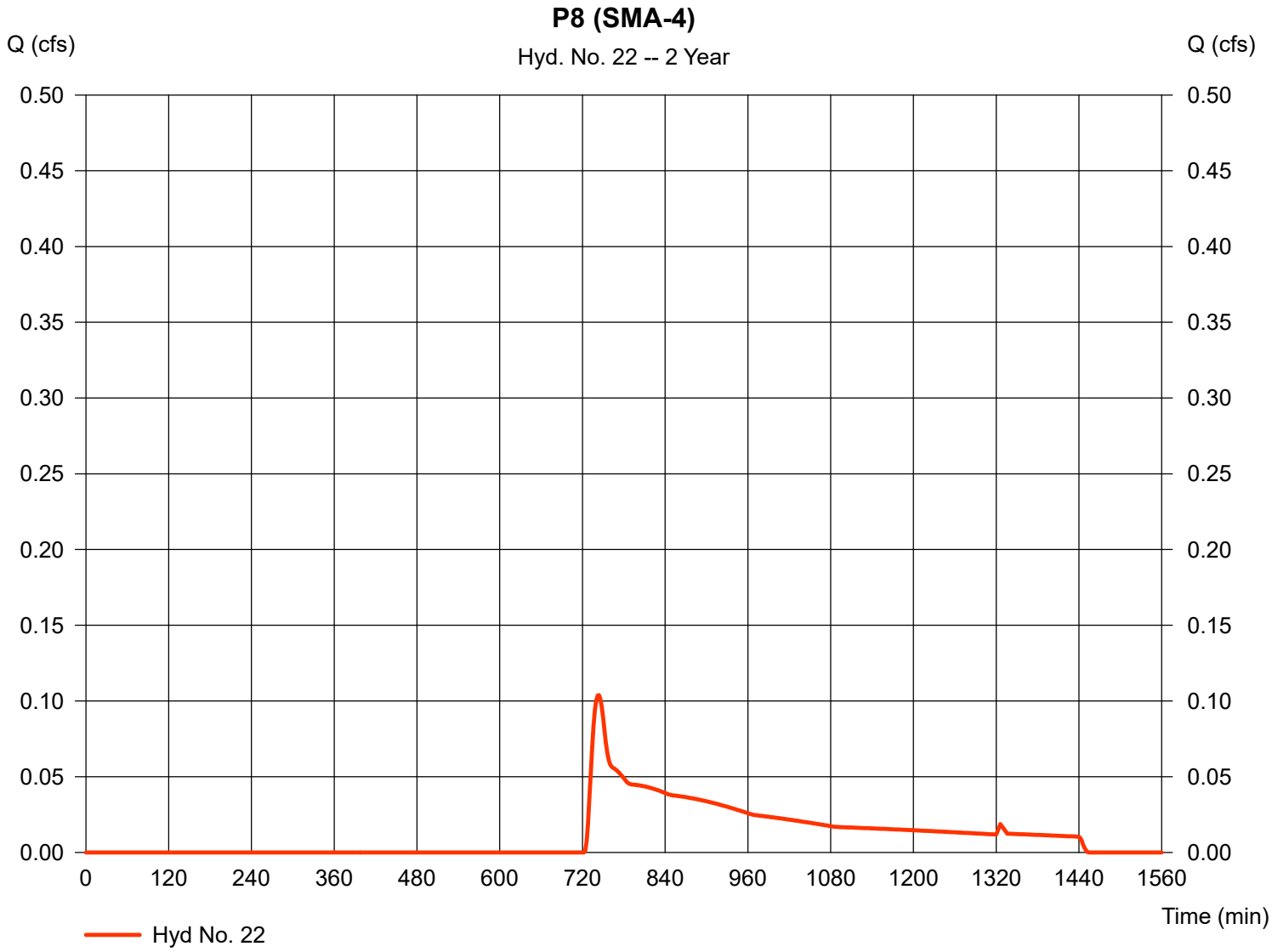
# Hydrograph Report



## Hyd. No. 22

P8 (SMA-4)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.104 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 744 min |
| Time interval | = | 2 min | Hyd. volume | = | 1,068 cuft |
| Drainage area | = | 1.460 ac | Curve number | = | 54.2 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 9.10 min |
| Total precip. | = | 3.10 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

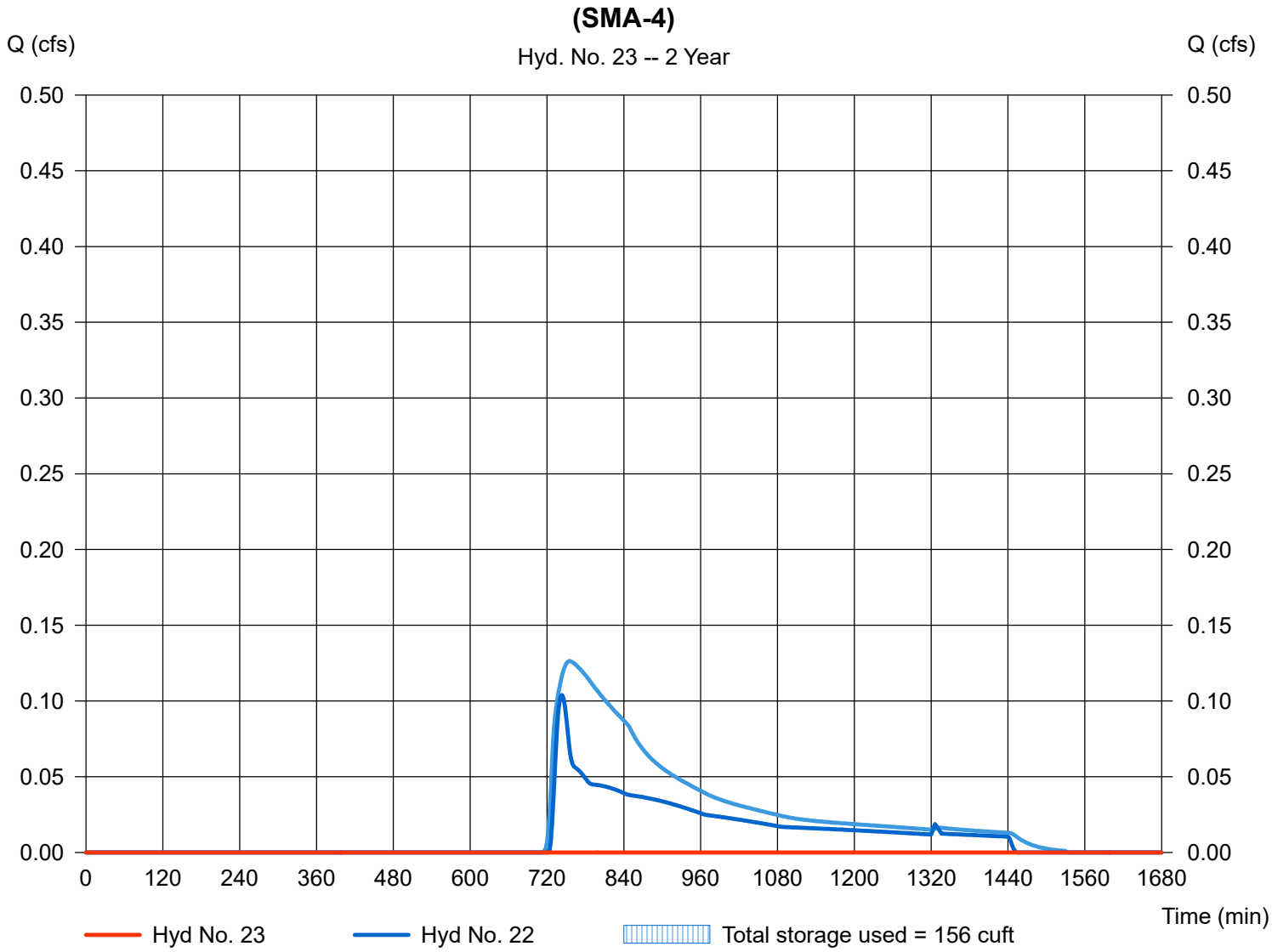


## Hyd. No. 23

(SMA-4)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 1074 min |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Inflow hyd. No. | = | 22 - P8 (SMA-4) | Max. Elevation | = | 184.36 ft |
| Reservoir name | = | Inf. Basin (SMA-4) | Max. Storage | = | 156 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 4 - Inf. Basin (SMA-4)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 184.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 184.00 | 293 | 0 | 0 |
| 1.00 | 185.00 | 600 | 437 | 437 |
| 2.00 | 186.00 | 963 | 774 | 1,212 |
| 3.00 | 187.00 | 2,002 | 1,451 | 2,663 |
| 4.00 | 188.00 | 2,694 | 2,339 | 5,002 |
| 5.00 | 189.00 | 3,764 | 3,214 | 8,216 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 5.00 | 0.00 | 0.00 |
| **Span (in)** | = 12.00 | 5.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 2 | 0 | 0 |
| **Invert El. (ft)** | = 183.52 | 185.80 | 0.00 | 0.00 |
| **Length (ft)** | = 57.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 1.00 | 0.00 | 0.00 | n/a |
| **N-Value** | = .012 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | Yes | No | No |

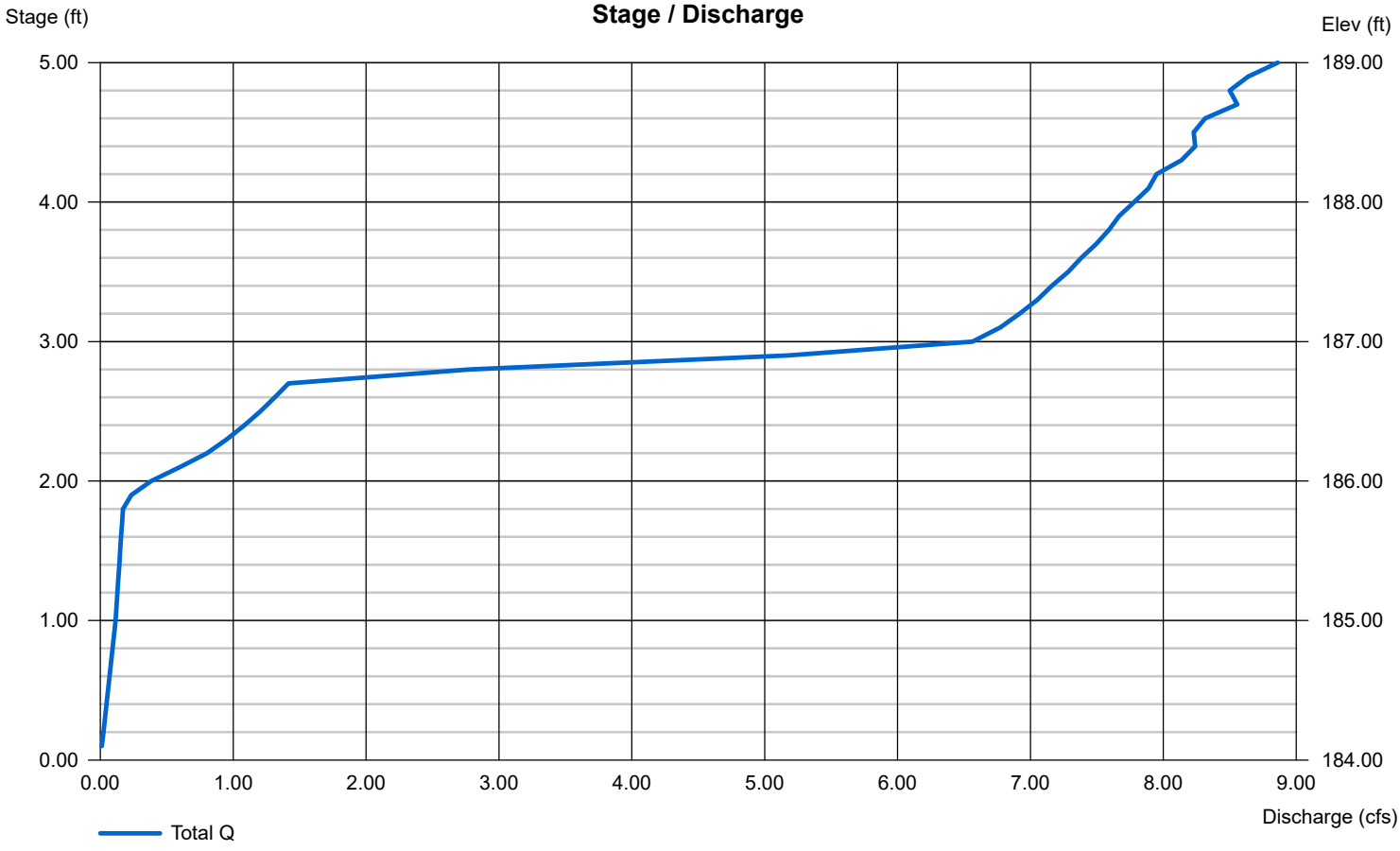
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | 0.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 186.70 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = Riser | --- | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



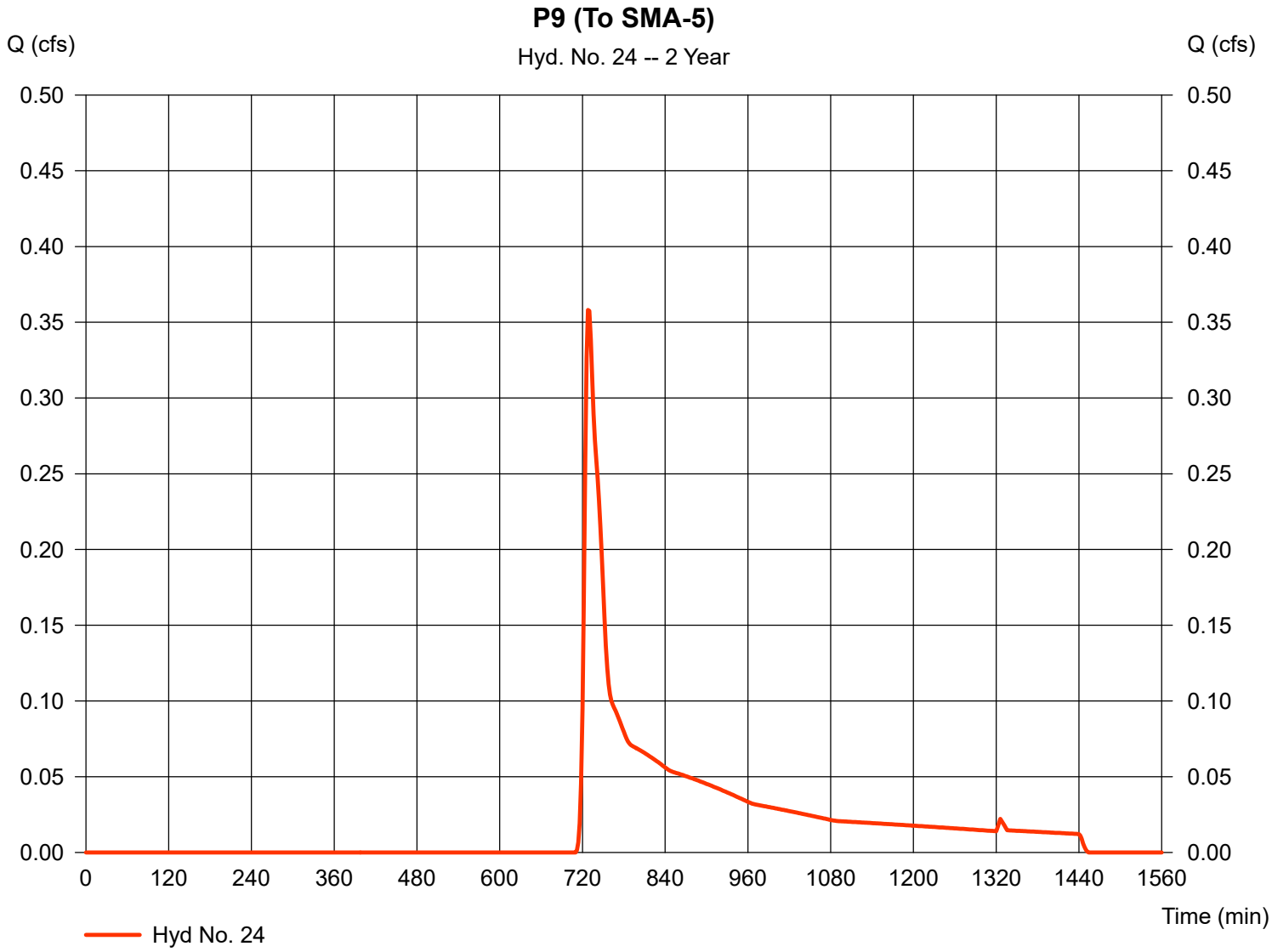
# Hydrograph Report



## Hyd. No. 24

P9 (To SMA-5)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.358 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 728 min |
| Time interval | = | 2 min | Hyd. volume | = | 1,798 cuft |
| Drainage area | = | 1.050 ac | Curve number | = | 62.9 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 7.30 min |
| Total precip. | = | 3.10 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

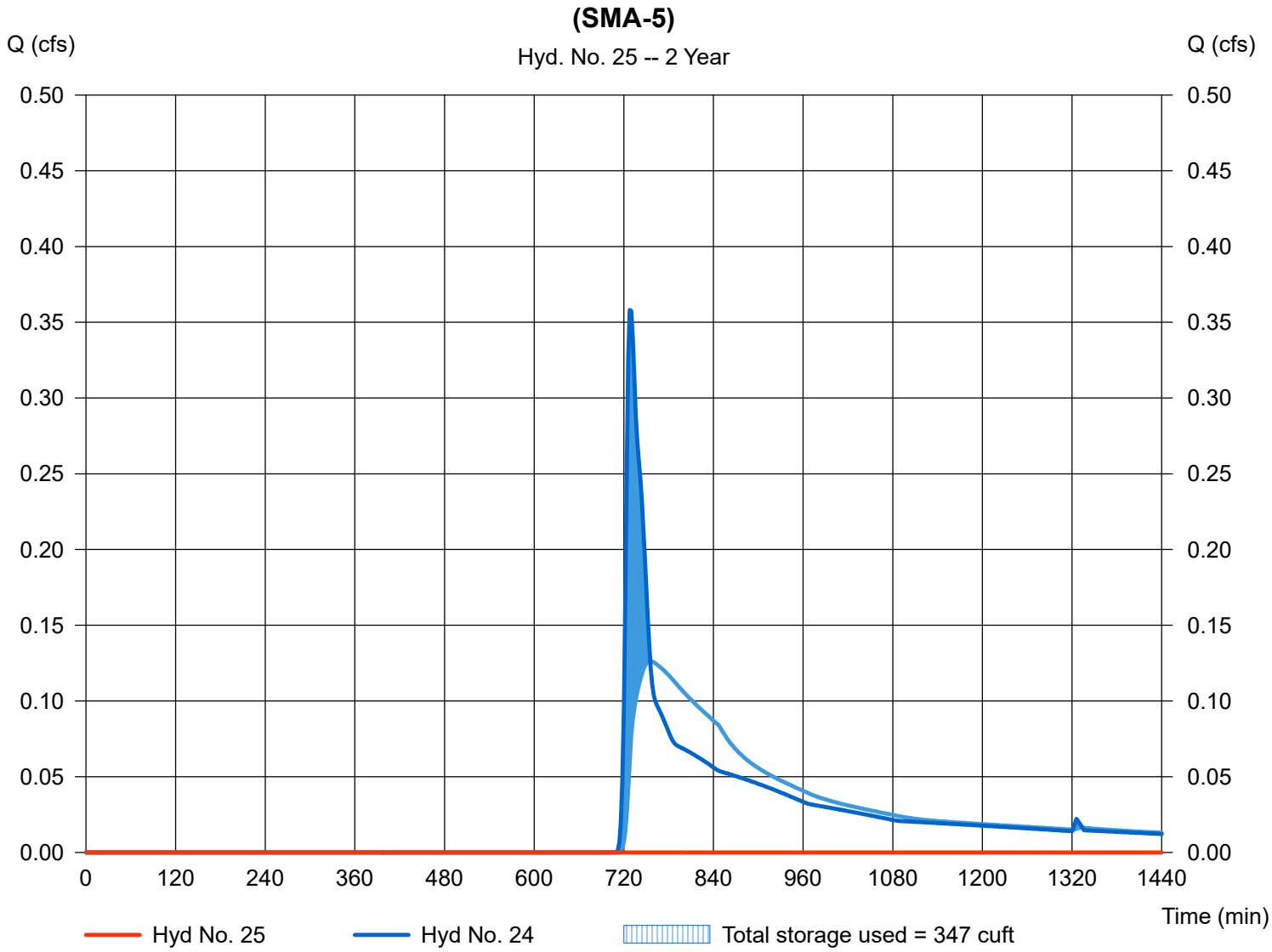


## Hyd. No. 25

(SMA-5)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 738 min |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Inflow hyd. No. | = | 24 - P9 (To SMA-5) | Max. Elevation | = | 184.19 ft |
| Reservoir name | = | Inf. Basin (SMA-5) | Max. Storage | = | 347 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



## Pond No. 7 - Inf. Basin (SMA-5)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 183.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 183.00 | 06 | 0 | 0 |
| 1.00 | 184.00 | 438 | 165 | 165 |
| 2.00 | 185.00 | 1,622 | 968 | 1,133 |
| 3.00 | 186.00 | 2,559 | 2,073 | 3,205 |
| 3.80 | 186.80 | 3,620 | 2,459 | 5,664 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 5.00 | 0.00 | 0.00 |
| **Span (in)** | = 12.00 | 5.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 2 | 0 | 0 |
| **Invert El. (ft)** | = 182.20 | 185.00 | 0.00 | 0.00 |
| **Length (ft)** | = 60.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 1.00 | 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 | No | No |

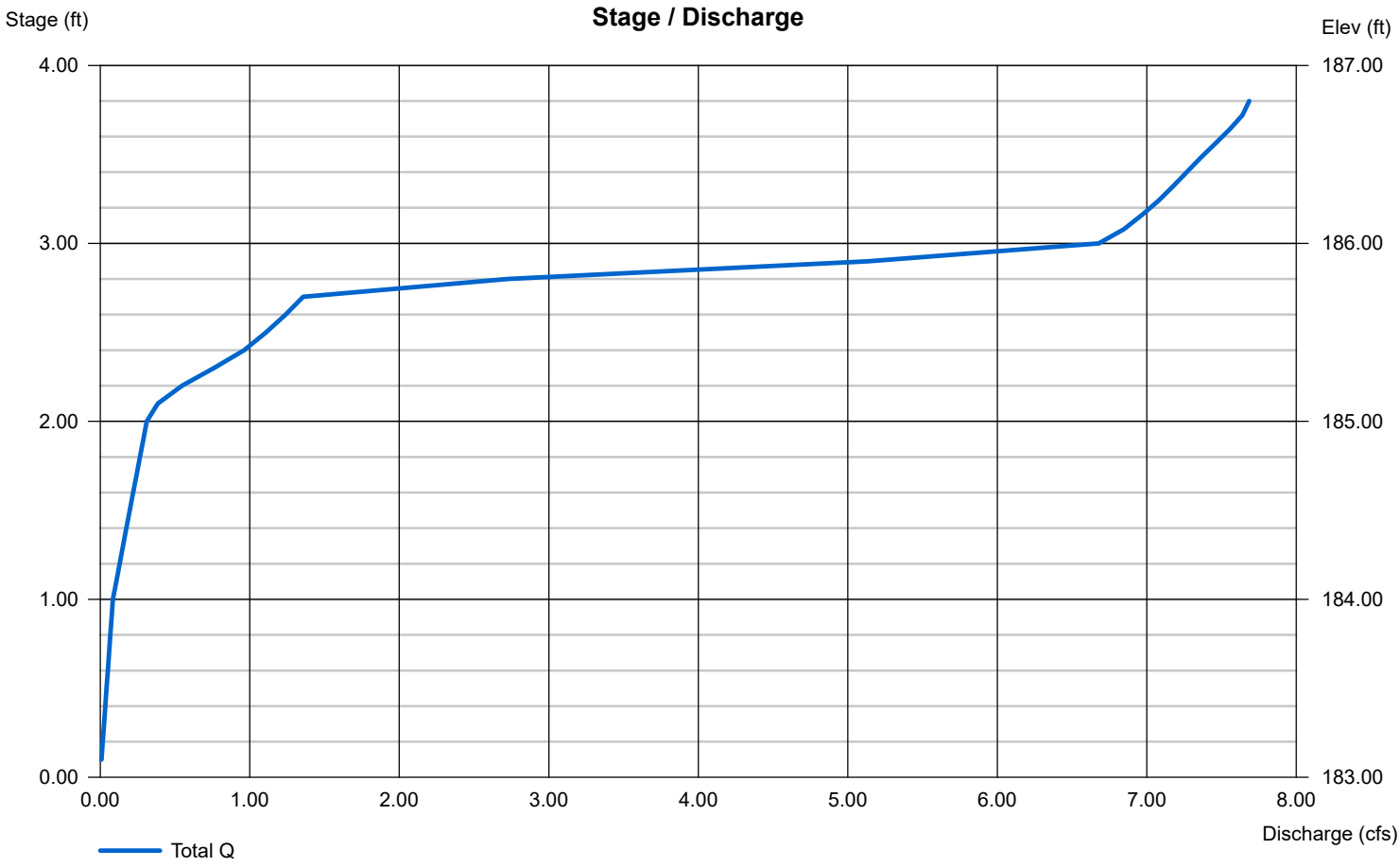
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | Inactive | 0.00 | 0.00 |
| **Crest El. (ft)** | = 185.70 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = Riser | Broad | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



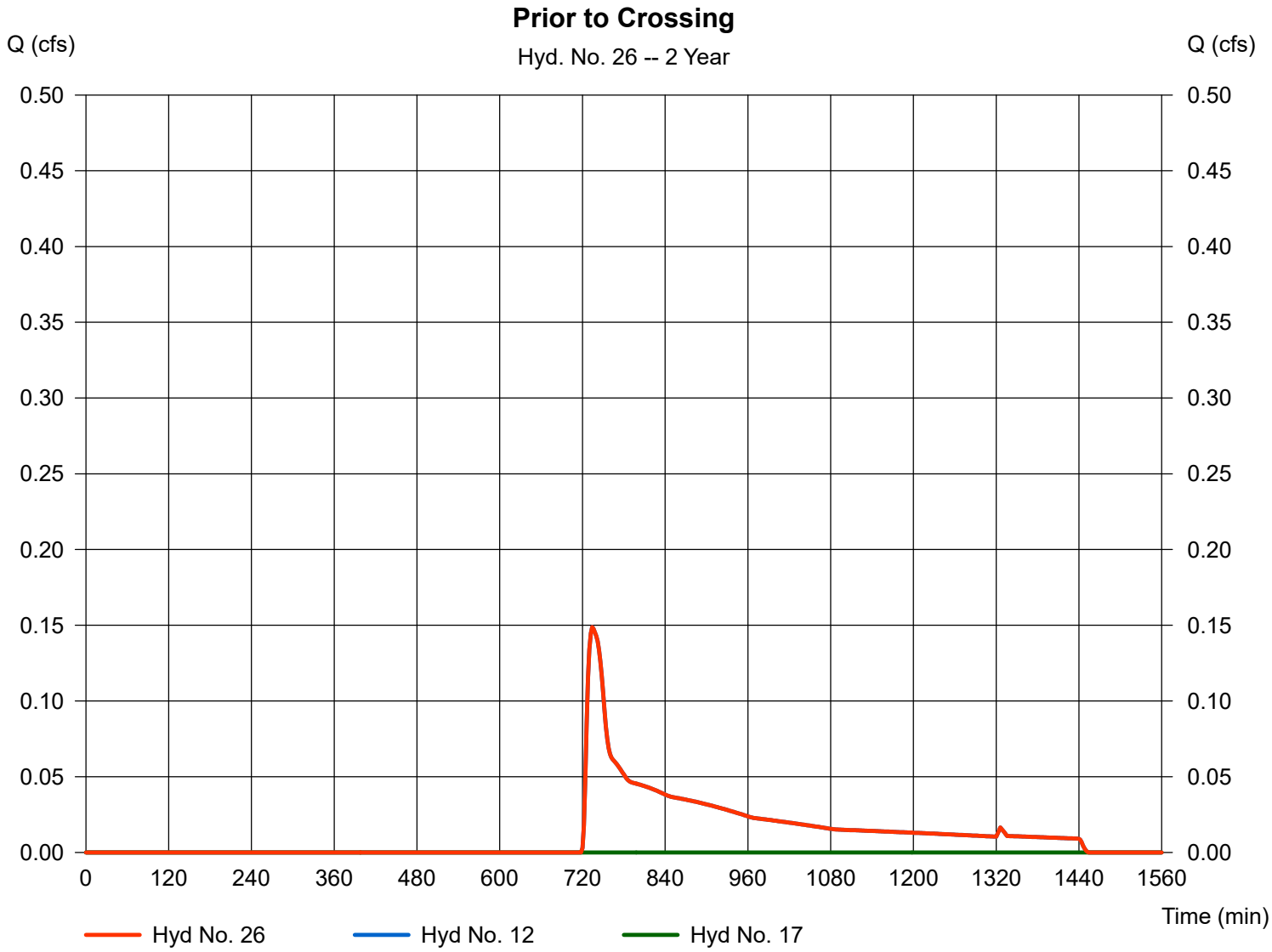
# Hydrograph Report



## Hyd. No. 26

Prior to Crossing

| | | | |
|---|---|---|---|
| Hydrograph type | = Combine | Peak discharge | = 0.149 cfs |
| Storm frequency | = 2 yrs | Time to peak | = 734 min |
| Time interval | = 2 min | Hyd. volume | = 1,114 cuft |
| Inflow hyds. | = 12, 17 | Contrib. drain. area | = 1.010 ac |



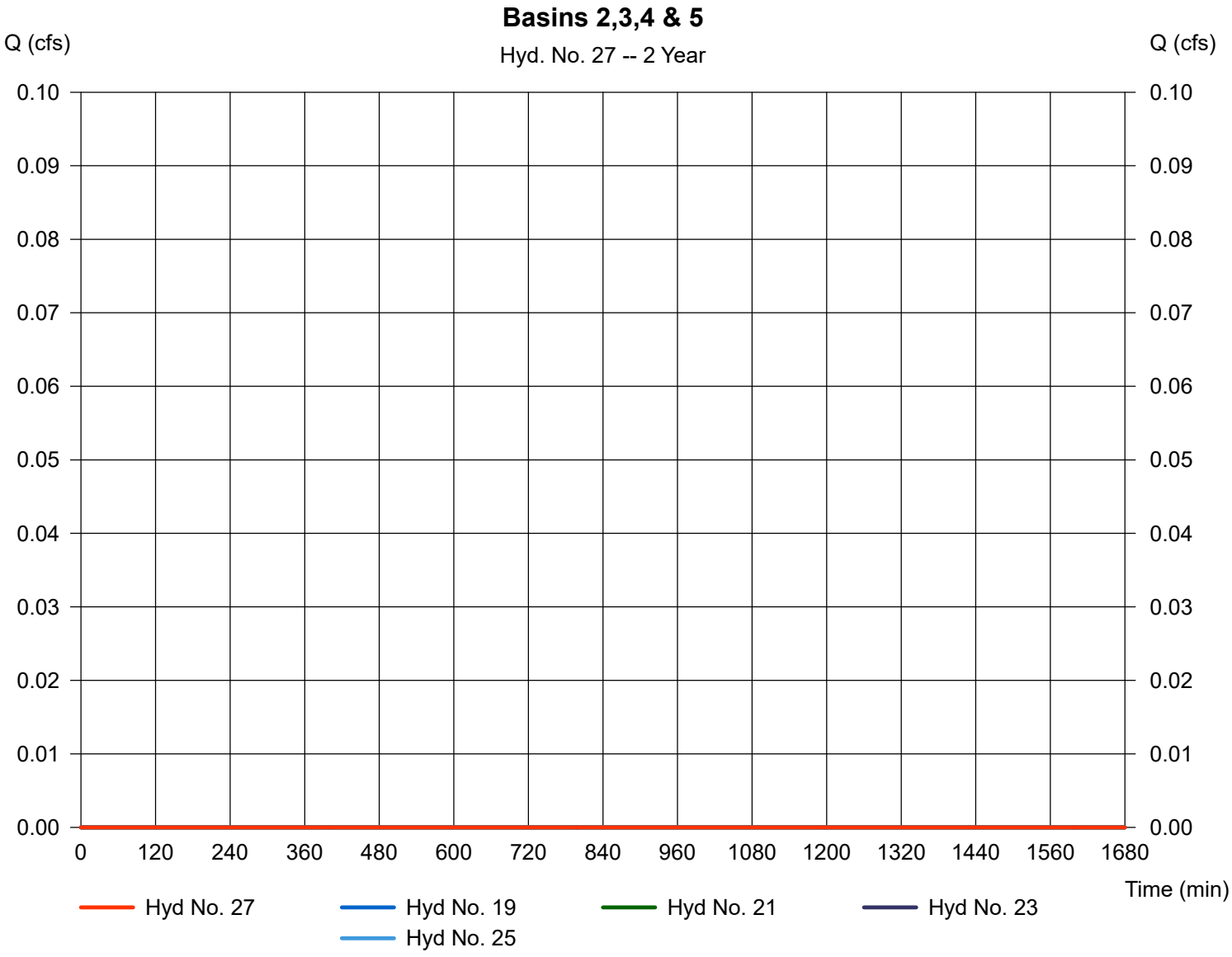
# Hydrograph Report



## Hyd. No. 27

Basins 2,3,4 & 5

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Combine | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 1264 min |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Inflow hyds. | = | 19, 21, 23, 25 | Contrib. drain. area | = | 0.000 ac |



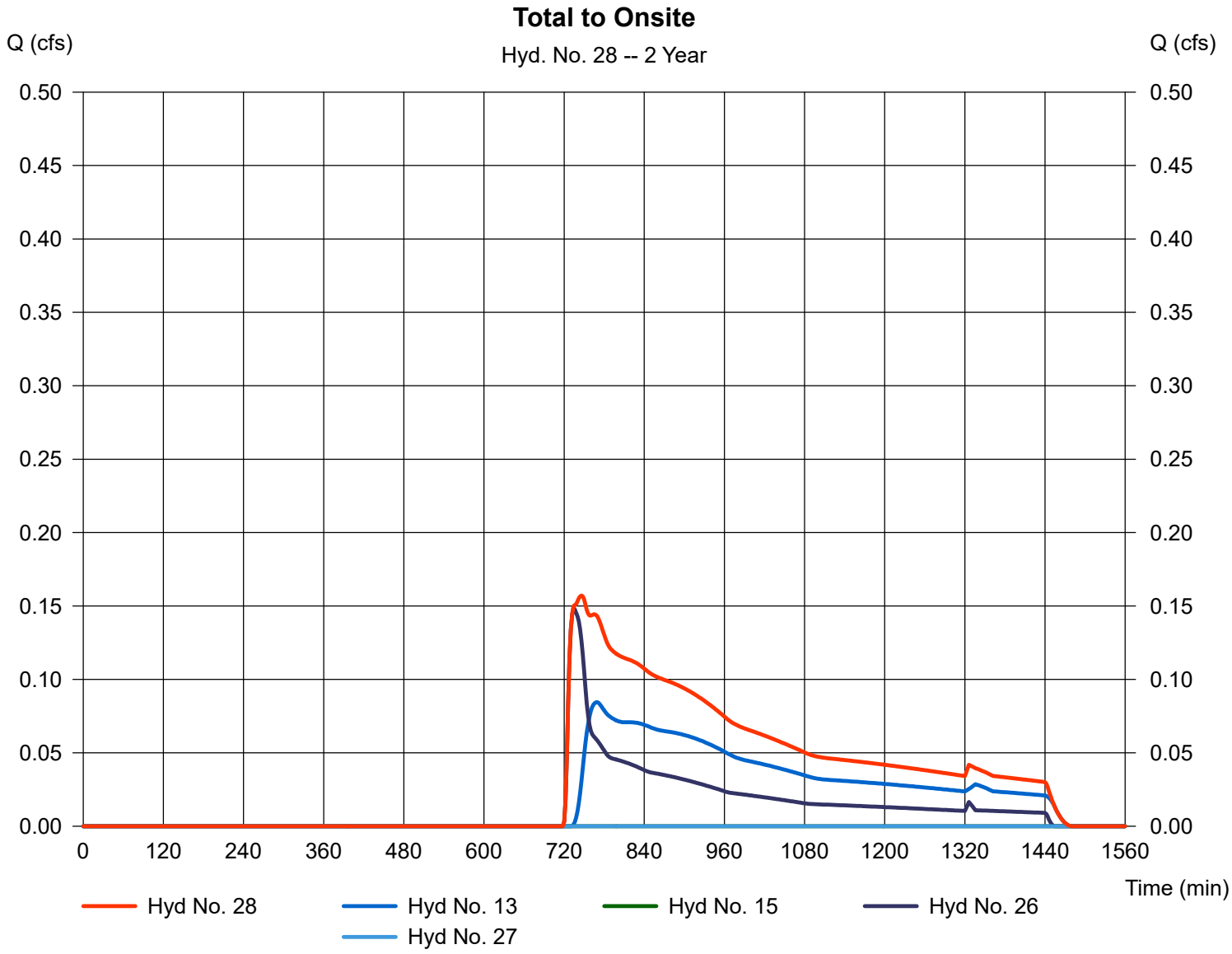
# Hydrograph Report



## Hyd. No. 28

Total to Onsite

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Combine | Peak discharge | = | 0.157 cfs |
| Storm frequency | = | 2 yrs | Time to peak | = | 746 min |
| Time interval | = | 2 min | Hyd. volume | = | 2,878 cuft |
| Inflow hyds. | = | 13, 15, 26, 27 | Contrib. drain. area | = | 3.660 ac |



# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

| 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 | 0.000 | 2 | n/a | 0 | ---- | ------ | ------ | E1 |
| 2 | SCS Runoff | 2.289 | 2 | 734 | 11,319 | ---- | ------ | ------ | E2 |
| 3 | SCS Runoff | 0.437 | 2 | 762 | 7,126 | ---- | ------ | ------ | E3 |
| 4 | Combine | 2.318 | 2 | 734 | 18,445 | 2, 3 | ------ | ------ | Total to Onsite |
| 6 | SCS Runoff | 33.64 | 2 | 736 | 164,901 | ---- | ------ | ------ | Offsite to Exist 15-inch Culvert |
| 7 | SCS Runoff | 15.02 | 2 | 732 | 62,912 | ---- | ------ | ------ | Town Drain Outlet to PL |
| 8 | Combine | 49.81 | 2 | 734 | 239,132 | 2, 6, 7 | ------ | ------ | Total to 15 inch culvert |
| 10 | SCS Runoff | 0.012 | 2 | 906 | 335 | ---- | ------ | ------ | P1 |
| 11 | Reservoir | 0.000 | 2 | 928 | 0 | 10 | 195.08 | 42.1 | WQ Swale(SMA-6) |
| 12 | SCS Runoff | 0.782 | 2 | 728 | 3,297 | ---- | ------ | ------ | P2 |
| 13 | SCS Runoff | 0.961 | 2 | 750 | 7,316 | ---- | ------ | ------ | P3 |
| 14 | SCS Runoff | 0.292 | 2 | 724 | 1,001 | ---- | ------ | ------ | P4 |
| 15 | Reservoir | 0.000 | 2 | 686 | 0 | 14 | 1.29 | 205 | Roof Drywell Lot 7 |
| 16 | SCS Runoff | 2.198 | 2 | 732 | 9,429 | ---- | ------ | ------ | P5 (To SMA-1) |
| 17 | Reservoir | 0.279 | 2 | 758 | 1,052 | 16 | 203.01 | 2,925 | SMA-1 |
| 18 | SCS Runoff | 0.669 | 2 | 734 | 3,582 | ---- | ------ | ------ | P6 (To SMA-2) |
| 19 | Reservoir | 0.000 | 2 | 910 | 0 | 18 | 197.15 | 901 | SMA-2 |
| 20 | SCS Runoff | 1.874 | 2 | 726 | 6,876 | ---- | ------ | ------ | P7 (SMA-3) |
| 21 | Reservoir | 0.000 | 2 | 1172 | 0 | 20 | 190.73 | 2,176 | (SMA-3) |
| 22 | SCS Runoff | 0.755 | 2 | 728 | 3,716 | ---- | ------ | ------ | P8 (SMA-4) |
| 23 | Reservoir | 0.000 | 2 | 744 | 0 | 22 | 185.67 | 953 | (SMA-4) |
| 24 | SCS Runoff | 1.198 | 2 | 728 | 4,558 | ---- | ------ | ------ | P9 (To SMA-5) |
| 25 | Reservoir | 0.031 | 2 | 754 | 38 | 24 | 185.06 | 1,249 | (SMA-5) |
| 26 | Combine | 0.782 | 2 | 728 | 4,349 | 12, 17, | ------ | ------ | Prior to Crossing |
| 27 | Combine | 0.031 | 2 | 754 | 38 | 19, 21, 23, 25, | ------ | ------ | Basins 2,3,4 & 5 |
| 28 | Combine | 1.602 | 2 | 746 | 11,703 | 13, 15, 26, 27 | ------ | ------ | Total to Onsite |
| 30 | Combine | 48.14 | 2 | 734 | 231,110 | 6, 7, 12, | ------ | ------ | Post to Open Box Culvert |

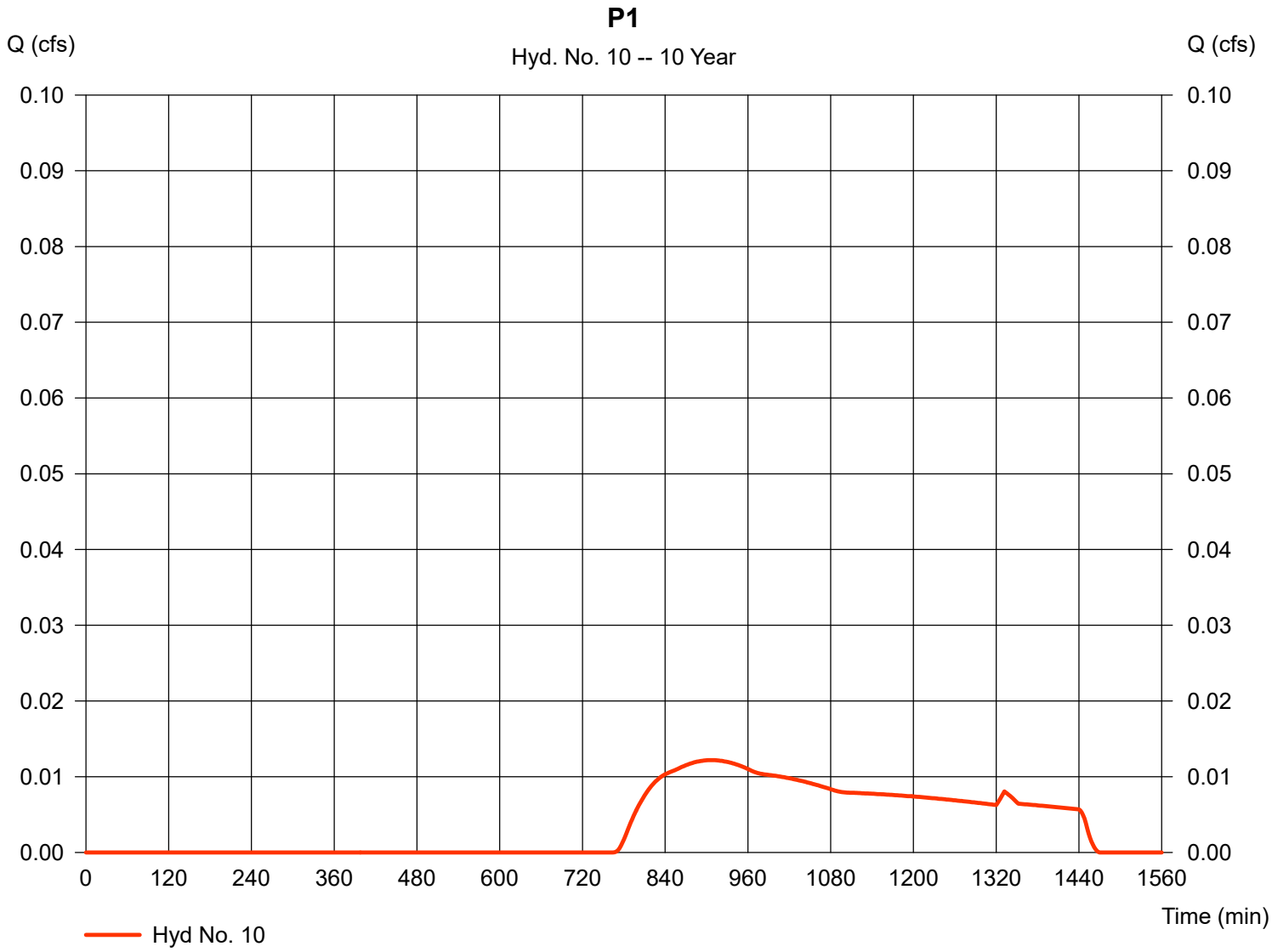
# Hydrograph Report



## Hyd. No. 10

P1

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.012 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 906 min |
| Time interval | = | 2 min | Hyd. volume | = | 335 cuft |
| Drainage area | = | 1.060 ac | Curve number | = | 38 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 18.80 min |
| Total precip. | = | 4.50 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

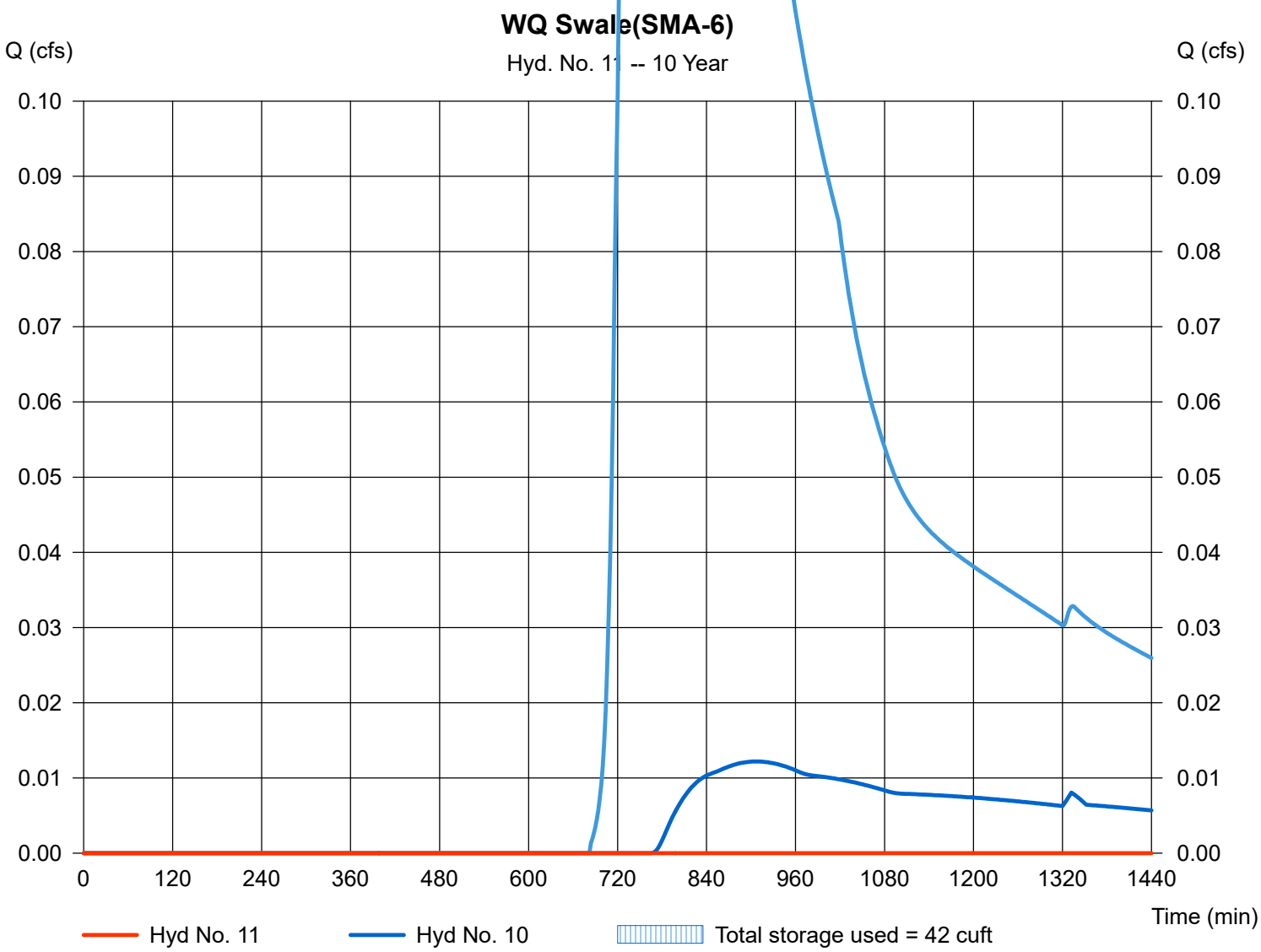
Hydraflow Hydrographs by Intelisolve v9.2 — Wednesday, Jan 31, 2024

## Hyd. No. 11

WQ Swale(SMA-6)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 928 min |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Inflow hyd. No. | = | 10 - P1 | Max. Elevation | = | 195.08 ft |
| Reservoir name | = | WQS (SMA-6) | Max. Storage | = | 42 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 6 - WQS (SMA-6)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 195.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 195.00 | 378 | 0 | 0 |
| 1.00 | 196.00 | 692 | 527 | 527 |
| 2.00 | 197.00 | 1,109 | 892 | 1,419 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Span (in)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **No. Barrels** | = 0 | 0 | 0 | 0 |
| **Invert El. (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Length (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 0.00 | 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 | No | No | No |

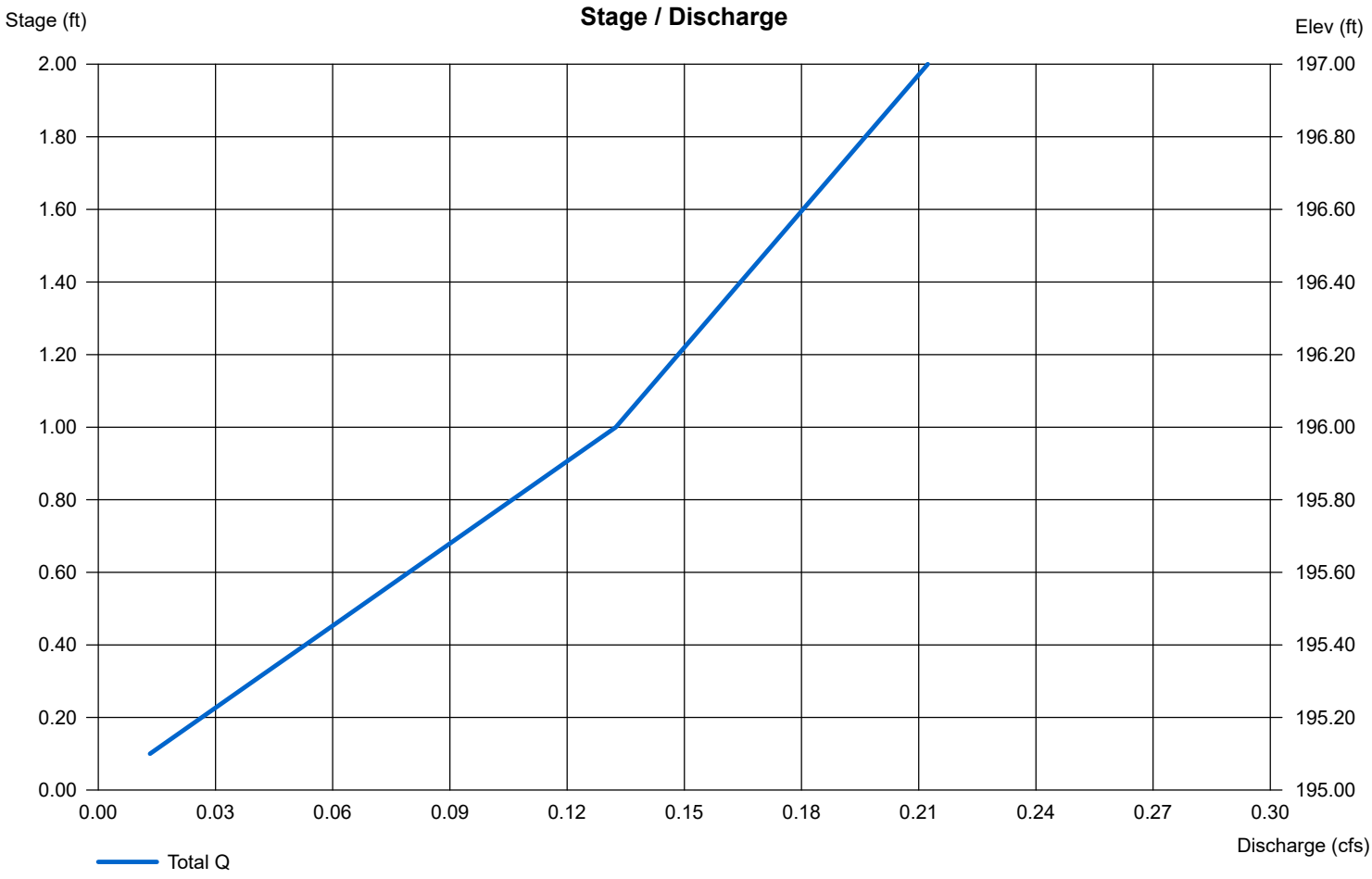
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 4.00 | 0.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 197.00 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 2.60 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = Broad | --- | --- | --- |
| **Multi-Stage** | = No | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



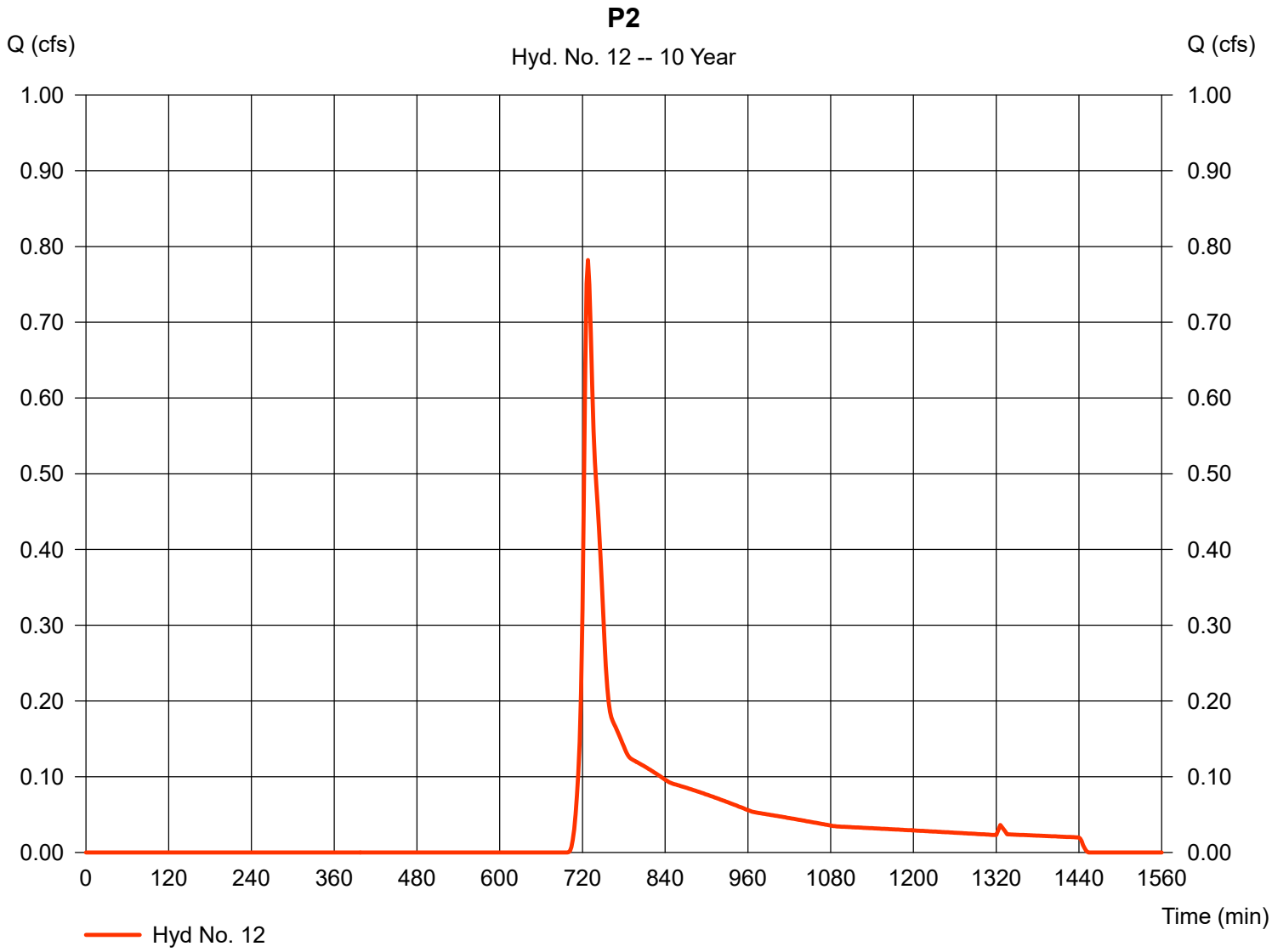
# Hydrograph Report



## Hyd. No. 12

P2

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.782 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 728 min |
| Time interval | = | 2 min | Hyd. volume | = | 3,297 cuft |
| Drainage area | = | 1.010 ac | Curve number | = | 57.9 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 9.60 min |
| Total precip. | = | 4.50 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



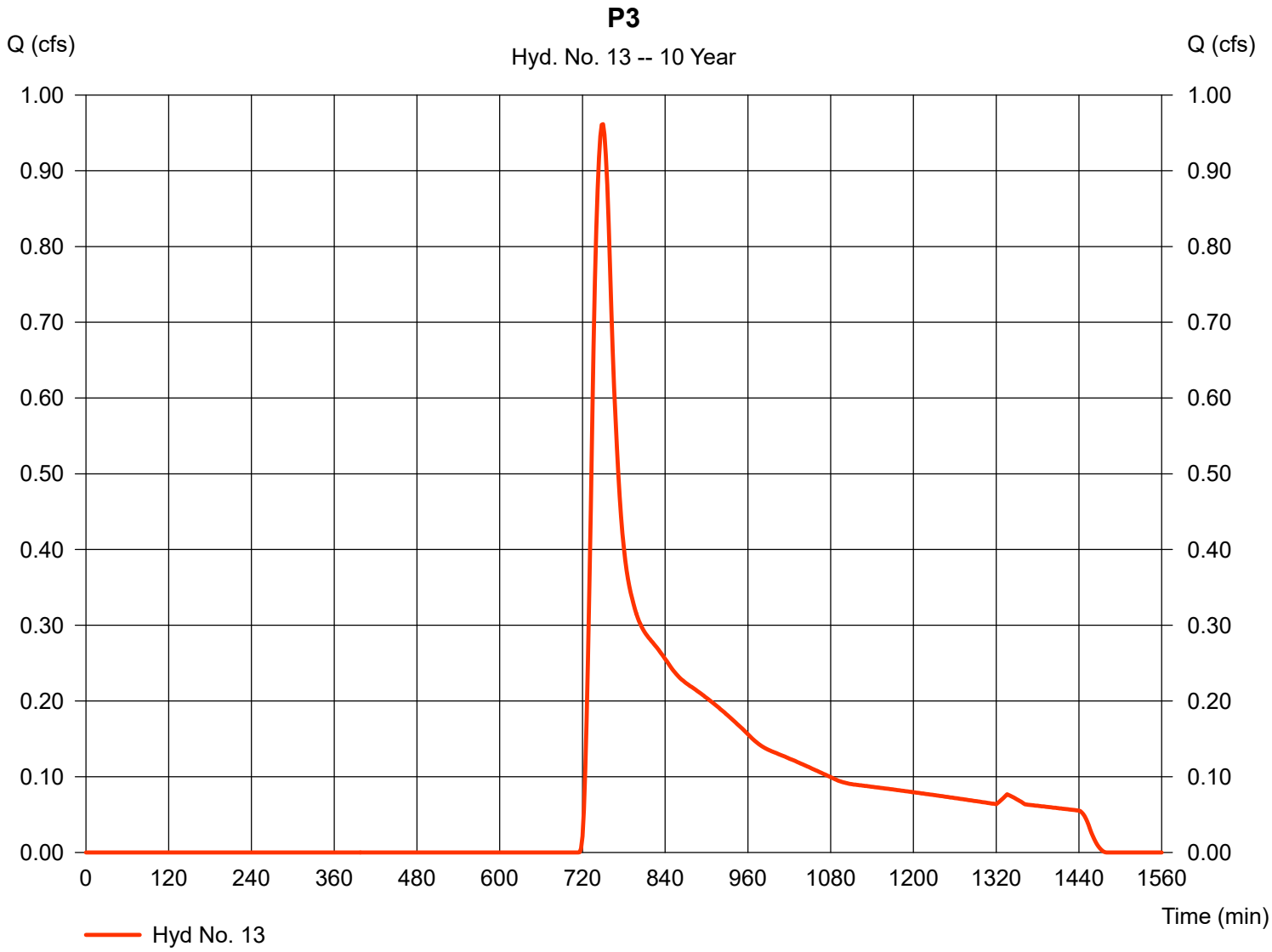
# Hydrograph Report



## Hyd. No. 13

P3

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.961 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 750 min |
| Time interval | = | 2 min | Hyd. volume | = | 7,316 cuft |
| Drainage area | = | 3.660 ac | Curve number | = | 51.3 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 24.70 min |
| Total precip. | = | 4.50 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



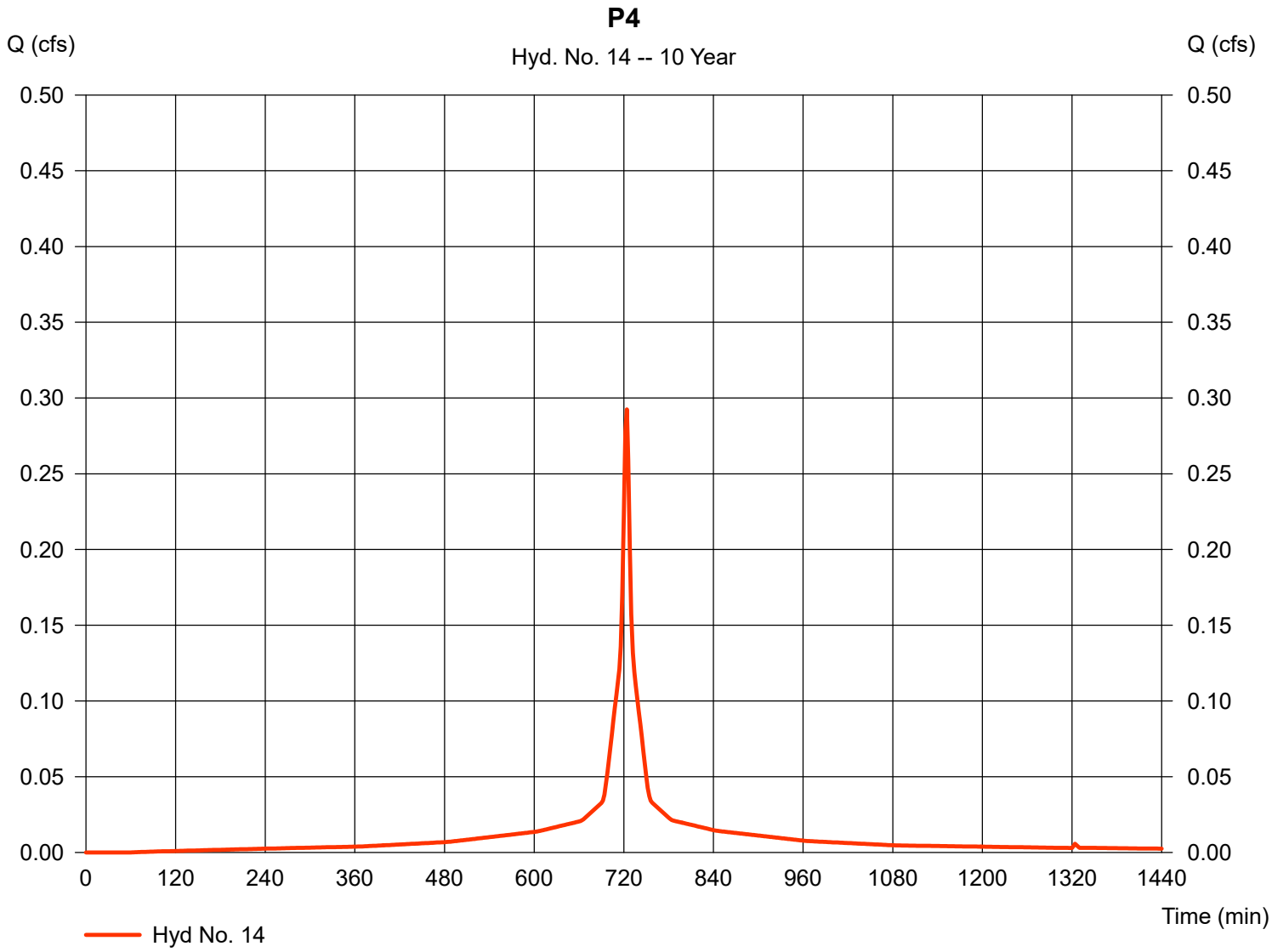
# Hydrograph Report



## Hyd. No. 14

P4

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.292 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 724 min |
| Time interval | = | 2 min | Hyd. volume | = | 1,001 cuft |
| Drainage area | = | 0.069 ac | Curve number | = | 98 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 6.00 min |
| Total precip. | = | 4.50 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

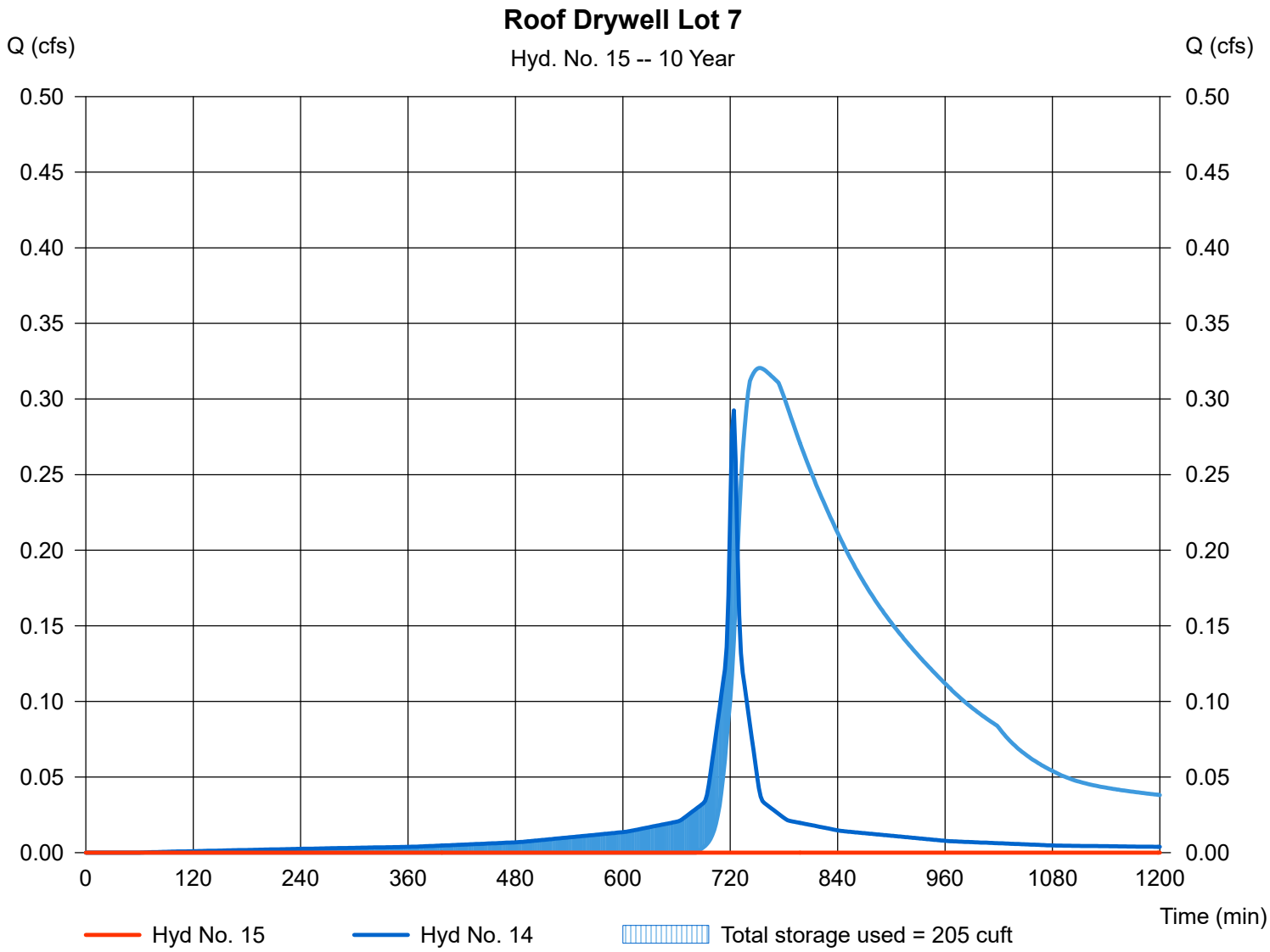


## Hyd. No. 15

Roof Drywell Lot 7

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 686 min |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Inflow hyd. No. | = | 14 - P4 | Max. Elevation | = | 1.29 ft |
| Reservoir name | = | SC-310 Drywell | Max. Storage | = | 205 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



## Pond No. 9 - SC-310 Drywell

### Pond Data

**UG Chambers -** Invert elev. = 0.50 ft, Rise x Span = 1.33 x 2.83 ft, Barrel Len = 21.35 ft, No. Barrels = 3, Slope = 0.00%, Headers = No
**Encasement -** Invert elev. = 0.01 ft, Width = 3.83 ft, Height = 2.50 ft, Voids = 40.00%

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 0.01 | n/a | 0 | 0 |
| 0.25 | 0.26 | n/a | 25 | 25 |
| 0.50 | 0.51 | n/a | 26 | 50 |
| 0.75 | 0.76 | n/a | 52 | 102 |
| 1.00 | 1.01 | n/a | 51 | 152 |
| 1.25 | 1.26 | n/a | 48 | 201 |
| 1.50 | 1.51 | n/a | 45 | 245 |
| 1.75 | 1.76 | n/a | 38 | 284 |
| 2.00 | 2.01 | n/a | 26 | 310 |
| 2.25 | 2.26 | n/a | 25 | 334 |
| 2.50 | 2.51 | n/a | 25 | 359 |

### Culvert / Orifice Structures

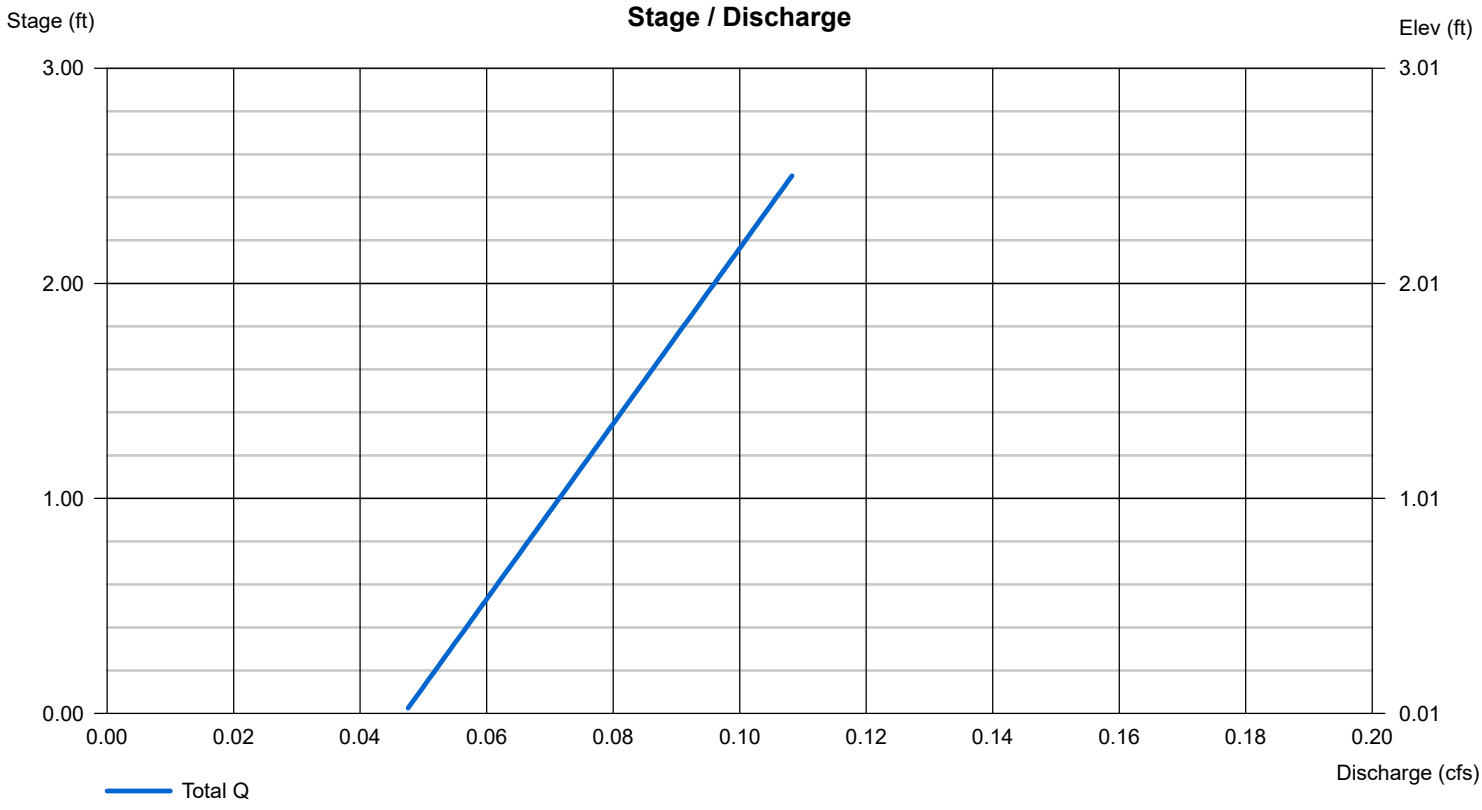
| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Span (in)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **No. Barrels** | = 0 | 0 | 0 | 0 |
| **Invert El. (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Length (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 0.00 | 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 | No | No | No |

### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = --- | --- | --- | --- |
| **Multi-Stage** | = No | No | No | No |

**Exfil.(in/hr)** = 8.270 (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).



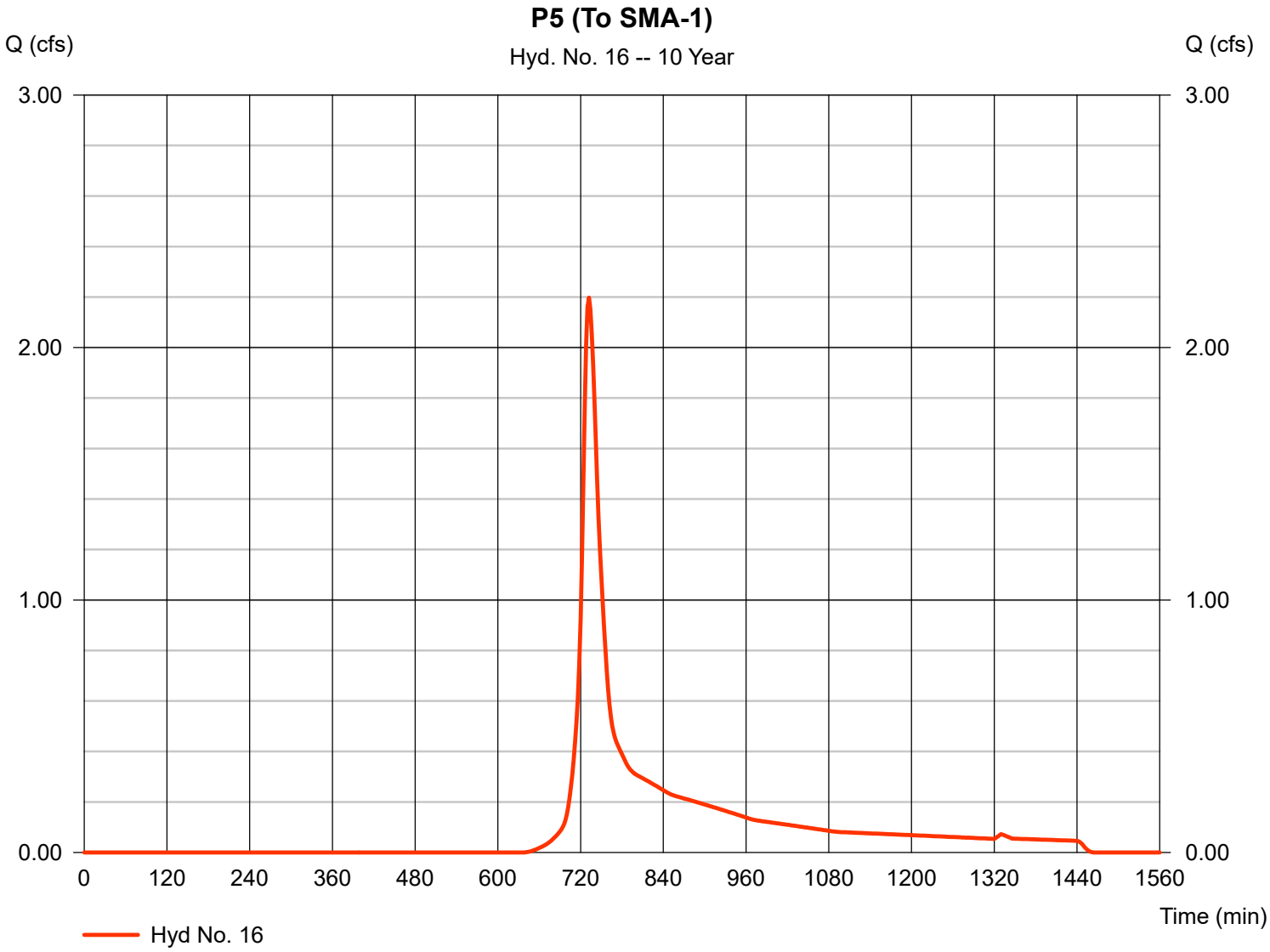
# Hydrograph Report



## Hyd. No. 16

P5 (To SMA-1)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 2.198 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 732 min |
| Time interval | = | 2 min | Hyd. volume | = | 9,429 cuft |
| Drainage area | = | 1.820 ac | Curve number | = | 67 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 15.80 min |
| Total precip. | = | 4.50 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

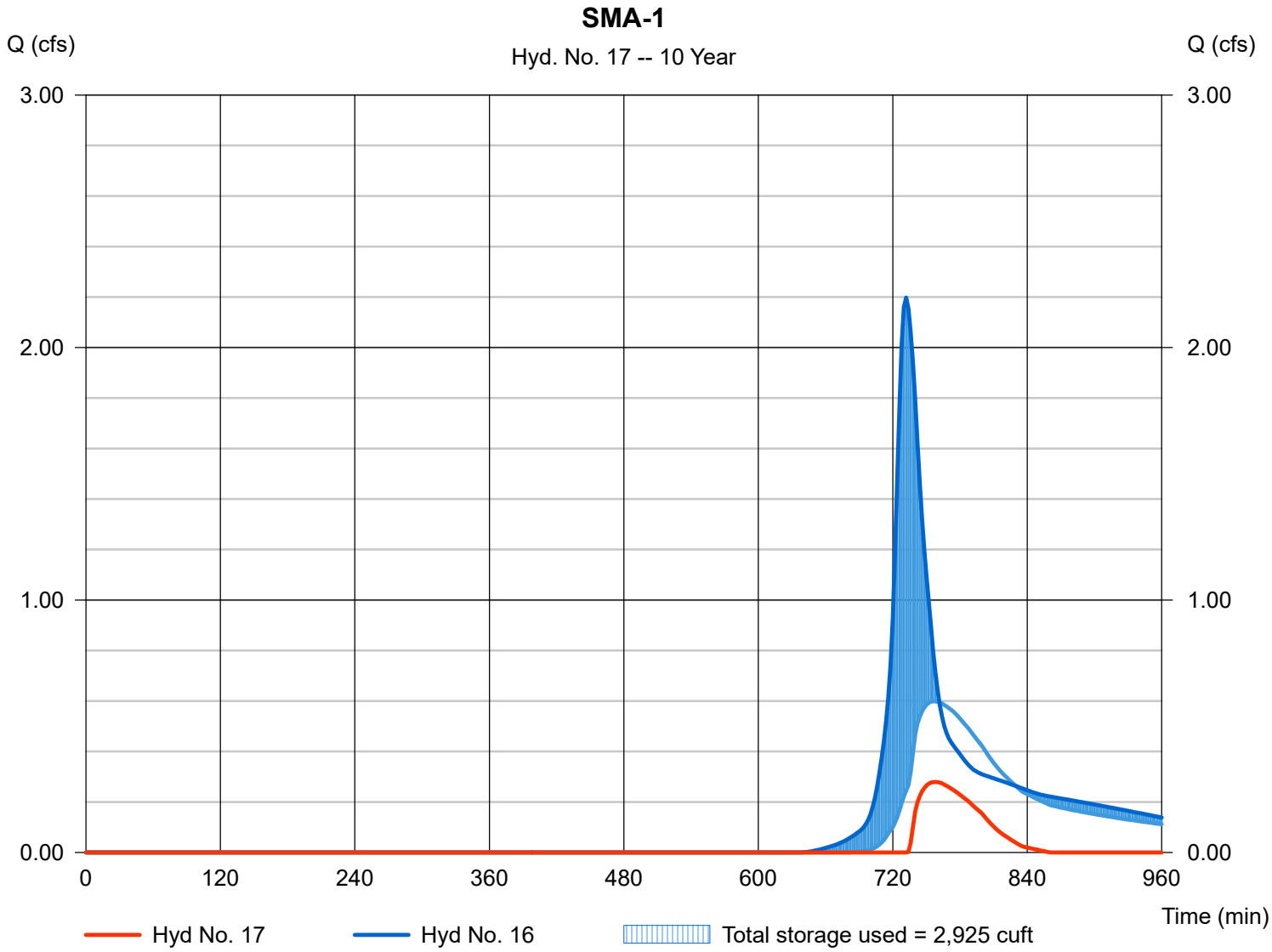


## Hyd. No. 17

SMA-1

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.279 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 758 min |
| Time interval | = | 2 min | Hyd. volume | = | 1,052 cuft |
| Inflow hyd. No. | = | 16 - P5 (To SMA-1) | Max. Elevation | = | 203.01 ft |
| Reservoir name | = | Inf. Basin (SMA-1) | Max. Storage | = | 2,925 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 8 - Inf. Basin (SMA-1)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 201.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 201.00 | 768 | 0 | 0 |
| 1.00 | 202.00 | 1,386 | 1,062 | 1,062 |
| 2.00 | 203.00 | 2,337 | 1,841 | 2,903 |
| 3.00 | 204.00 | 3,131 | 2,724 | 5,627 |
| 4.00 | 205.00 | 3,473 | 3,300 | 8,927 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 4.00 | 6.00 | 0.00 |
| **Span (in)** | = 12.00 | 4.00 | 6.00 | 0.00 |
| **No. Barrels** | = 1 | 1 | 3 | 0 |
| **Invert El. (ft)** | = 199.96 | 202.40 | 203.20 | 0.00 |
| **Length (ft)** | = 55.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 1.70 | 0.00 | 0.00 | n/a |
| **N-Value** | = .012 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | Yes | Yes | No |

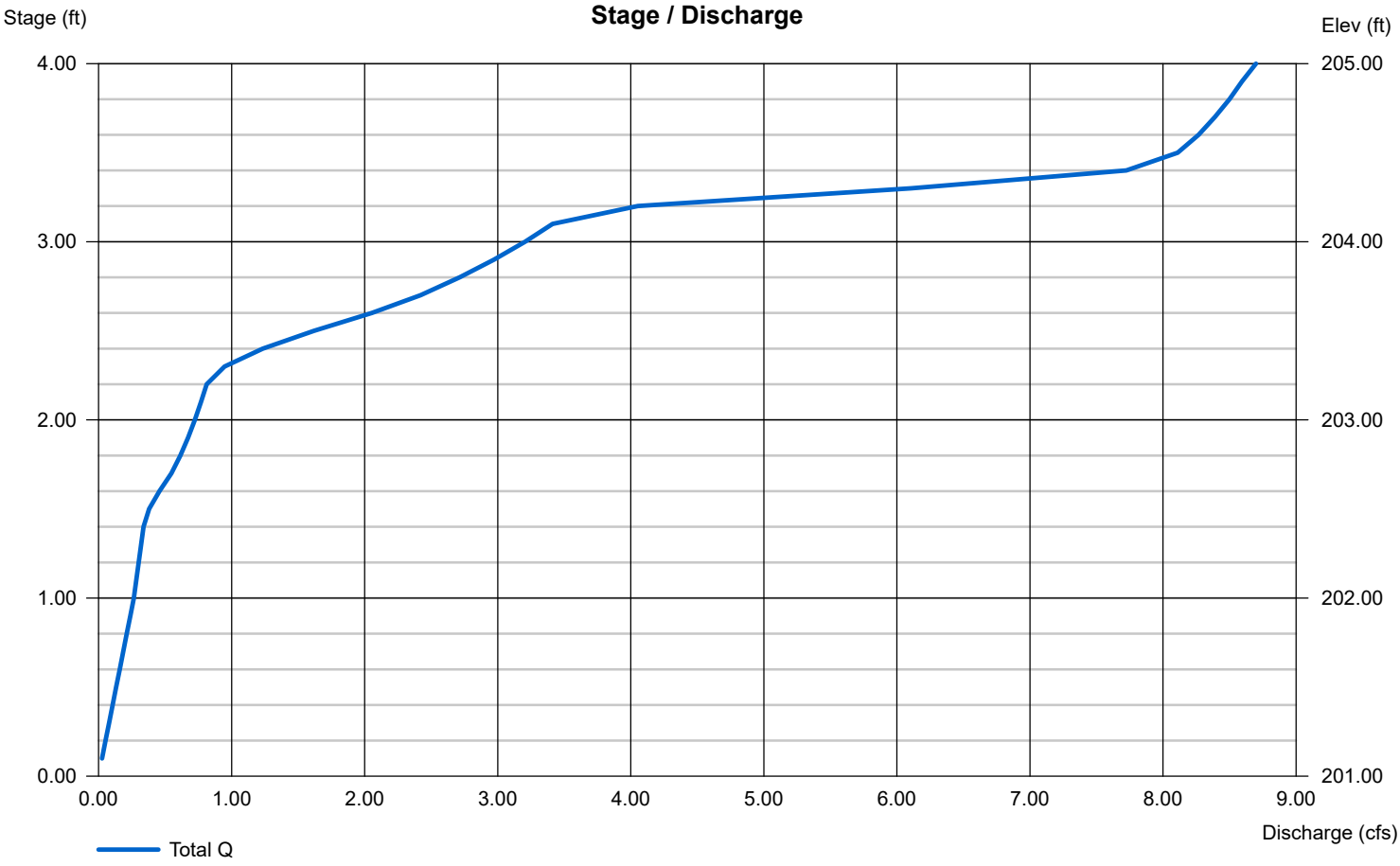
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 204.15 | 205.25 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 2.60 | 3.33 | 3.33 |
| **Weir Type** | = Riser | Broad | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



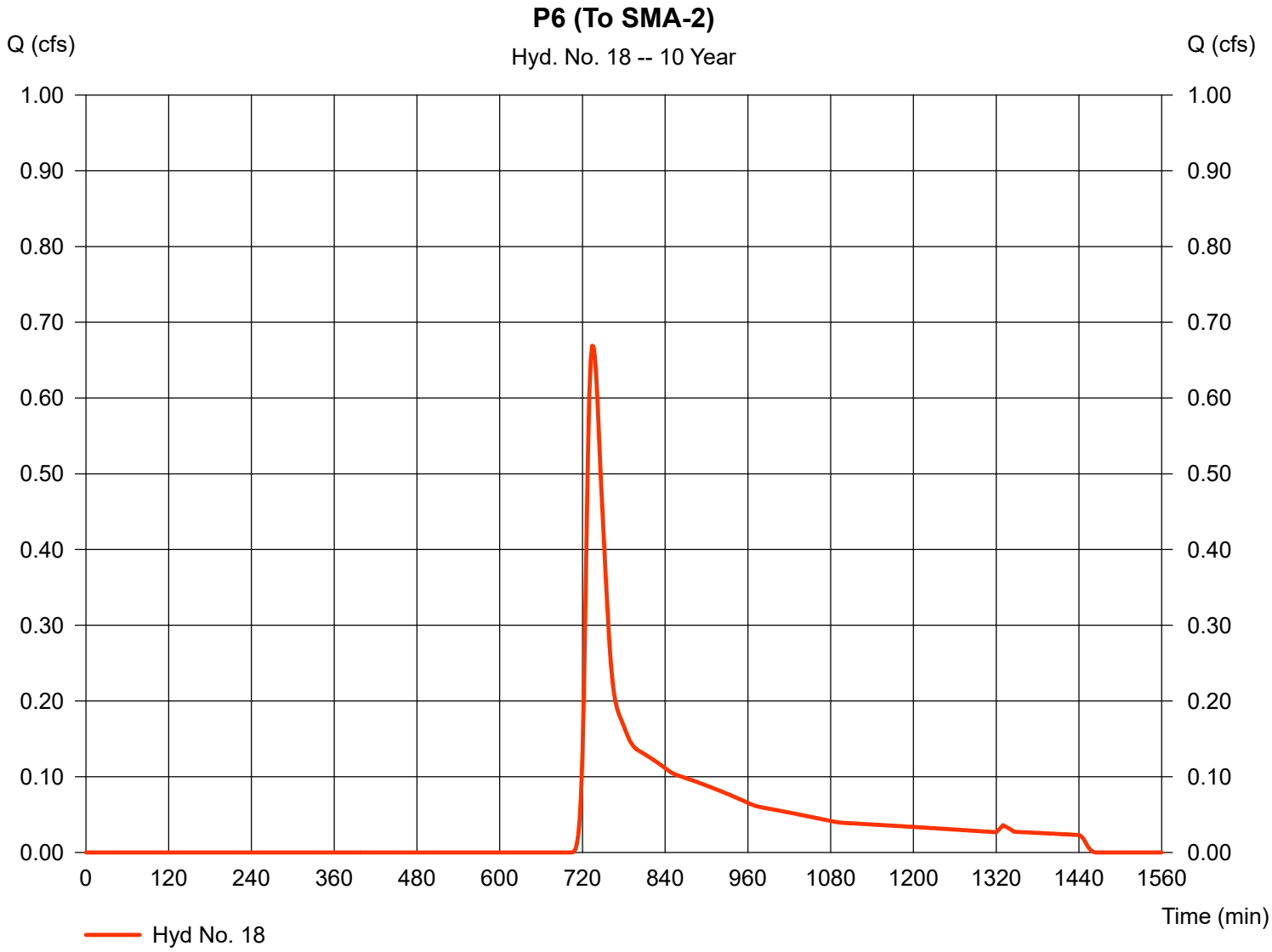
# Hydrograph Report



## Hyd. No. 18

P6 (To SMA-2)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.669 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 734 min |
| Time interval | = | 2 min | Hyd. volume | = | 3,582 cuft |
| Drainage area | = | 1.290 ac | Curve number | = | 55.8 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 16.40 min |
| Total precip. | = | 4.50 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

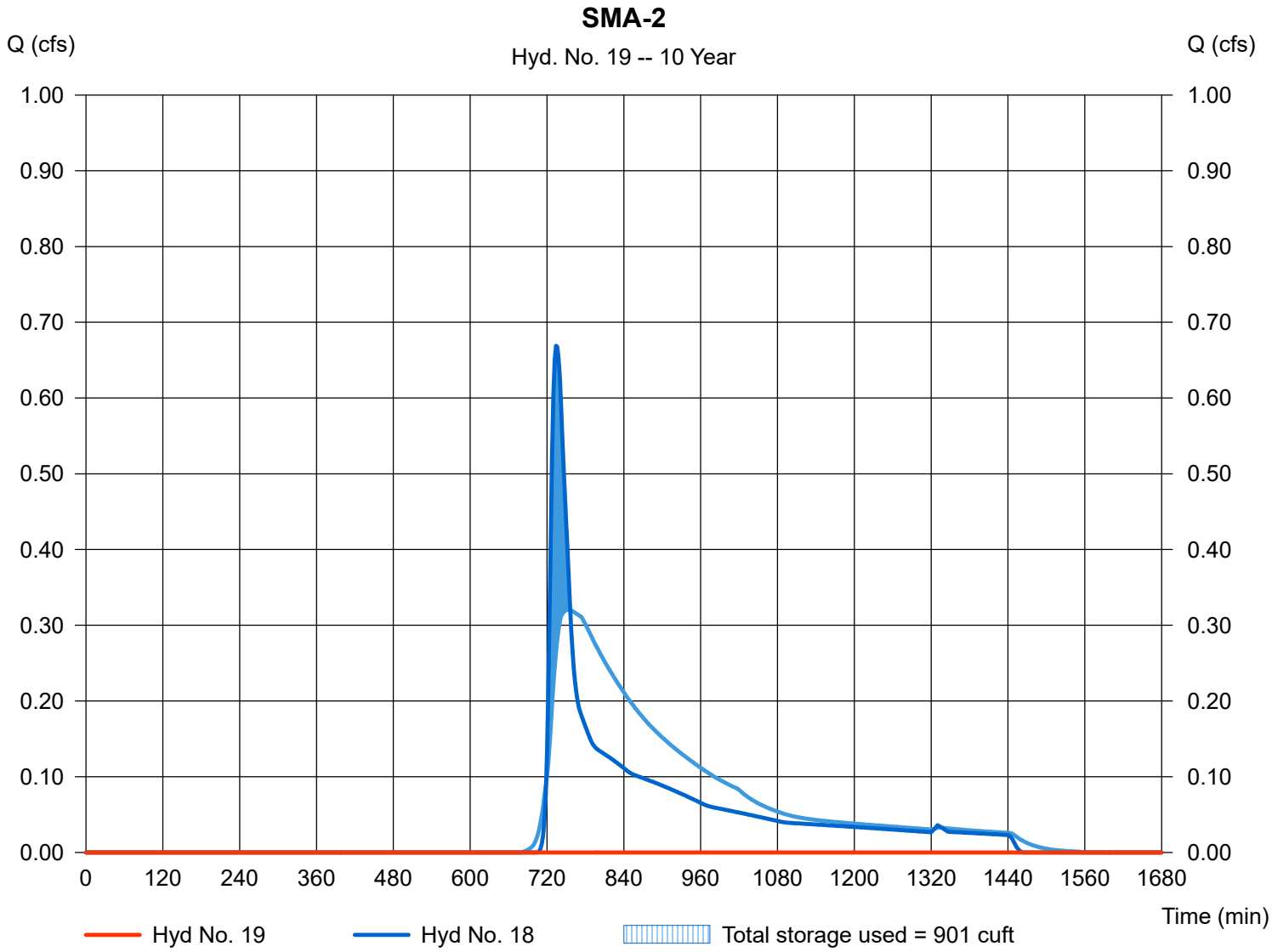


## Hyd. No. 19

SMA-2

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 910 min |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Inflow hyd. No. | = | 18 - P6 (To SMA-2) | Max. Elevation | = | 197.15 ft |
| Reservoir name | = | Inf. Basin (SMA-2) | Max. Storage | = | 901 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 1 - Inf. Basin (SMA-2)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 196.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 196.00 | 553 | 0 | 0 |
| 1.00 | 197.00 | 922 | 730 | 730 |
| 2.00 | 198.00 | 1,357 | 1,132 | 1,862 |
| 3.00 | 199.00 | 2,775 | 2,024 | 3,886 |
| 4.00 | 200.00 | 3,494 | 3,127 | 7,013 |
| 5.00 | 201.00 | 6,124 | 4,747 | 11,761 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **Span (in)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 3 | 0 | 0 |
| **Invert El. (ft)** | = 195.46 | 198.01 | 0.00 | 0.00 |
| **Length (ft)** | = 22.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 6.00 | 0.00 | 0.00 | n/a |
| **N-Value** | = .012 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | Yes | No | No |

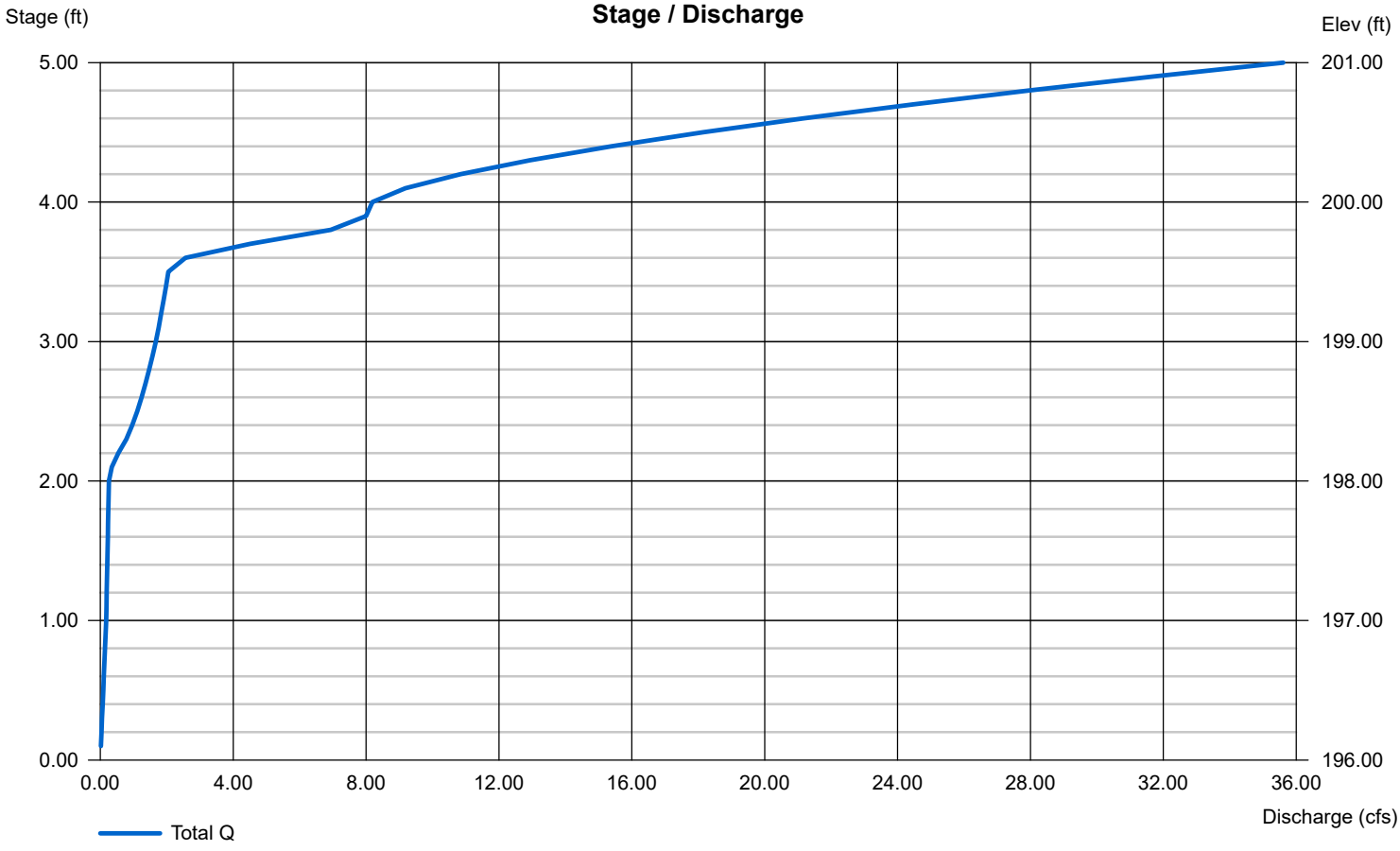
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | 10.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 199.55 | 200.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 2.60 | 3.33 | 3.33 |
| **Weir Type** | = Riser | Broad | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.240 (by Contour)

**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).



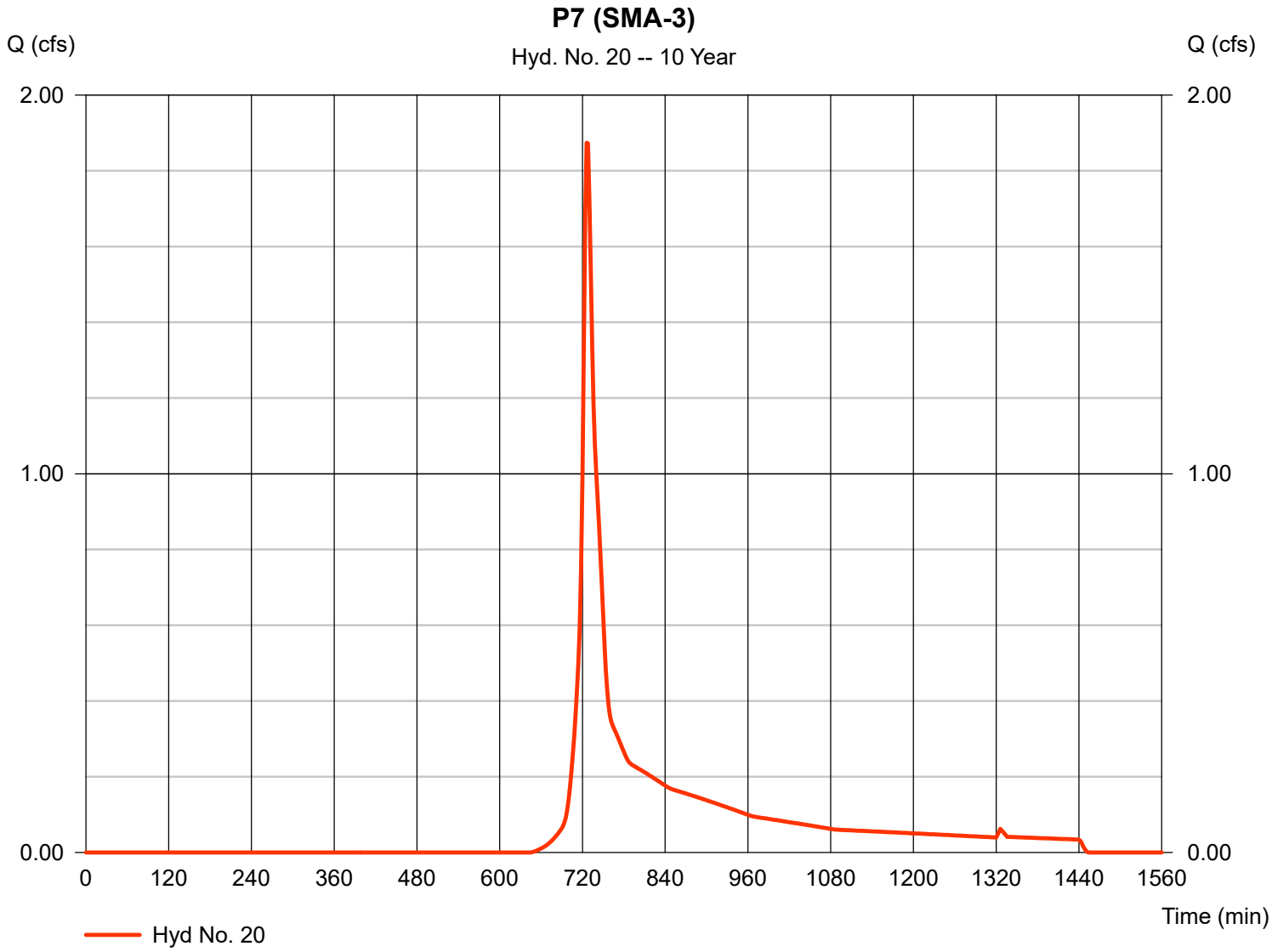
# Hydrograph Report



## Hyd. No. 20

P7 (SMA-3)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 1.874 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 726 min |
| Time interval | = | 2 min | Hyd. volume | = | 6,876 cuft |
| Drainage area | = | 1.350 ac | Curve number | = | 66.1 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 9.20 min |
| Total precip. | = | 4.50 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

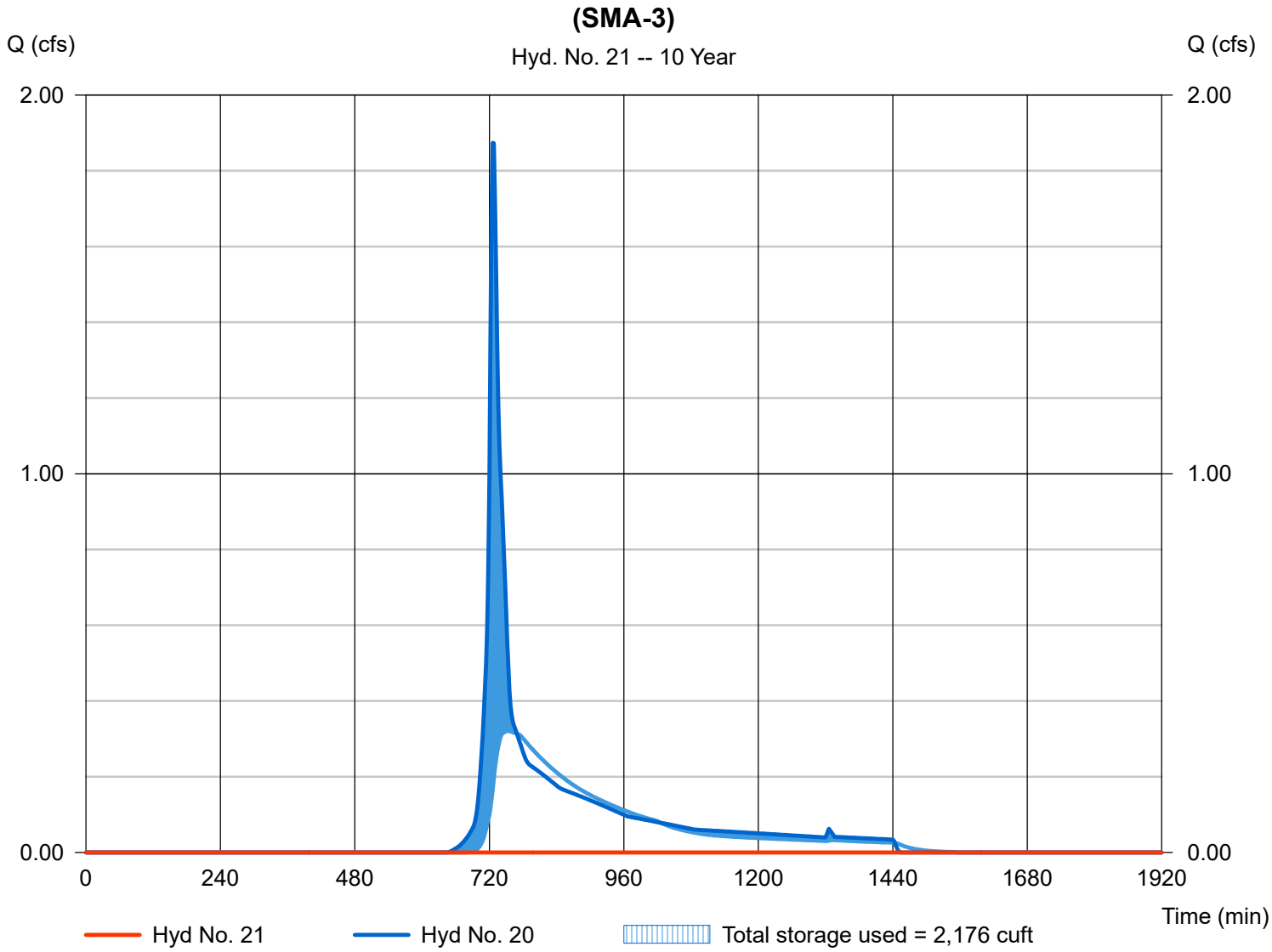


## Hyd. No. 21

(SMA-3)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 1172 min |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Inflow hyd. No. | = | 20 - P7 (SMA-3) | Max. Elevation | = | 190.73 ft |
| Reservoir name | = | Inf. Basin (SMA-3) | Max. Storage | = | 2,176 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 2 - Inf. Basin (SMA-3)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 190.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 190.00 | 2,526 | 0 | 0 |
| 1.00 | 191.00 | 3,423 | 2,963 | 2,963 |
| 2.00 | 192.00 | 5,063 | 4,216 | 7,179 |
| 3.00 | 193.00 | 5,904 | 5,478 | 12,656 |
| 4.00 | 194.00 | 6,811 | 6,351 | 19,008 |
| 5.00 | 195.00 | 7,847 | 7,322 | 26,330 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **Span (in)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 2 | 0 | 0 |
| **Invert El. (ft)** | = 188.92 | 190.96 | 0.00 | 0.00 |
| **Length (ft)** | = 45.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 2.00 | 0.00 | 0.00 | n/a |
| **N-Value** | = .012 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | Yes | No | No |

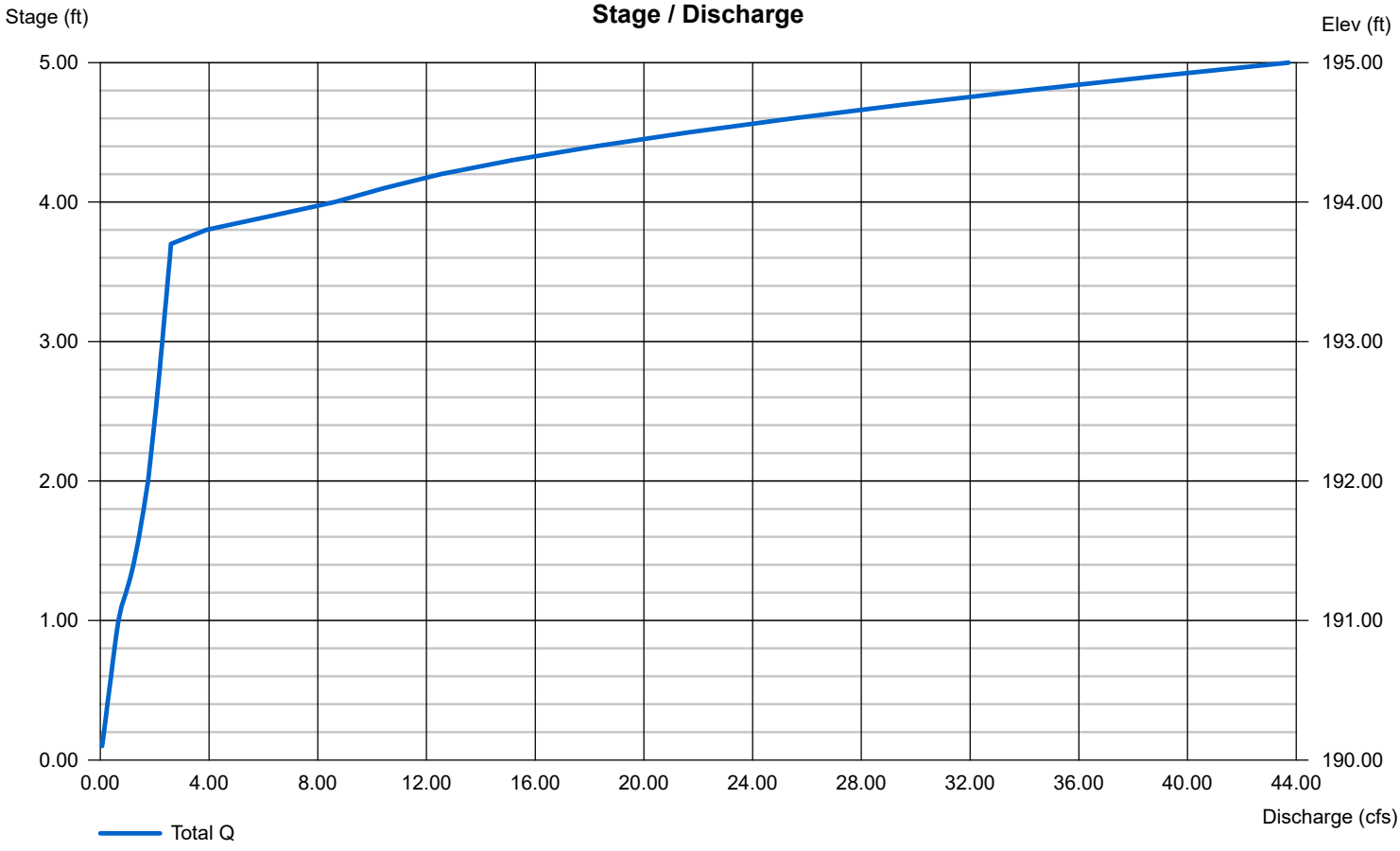
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | 10.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 193.70 | 194.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = Riser | Broad | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



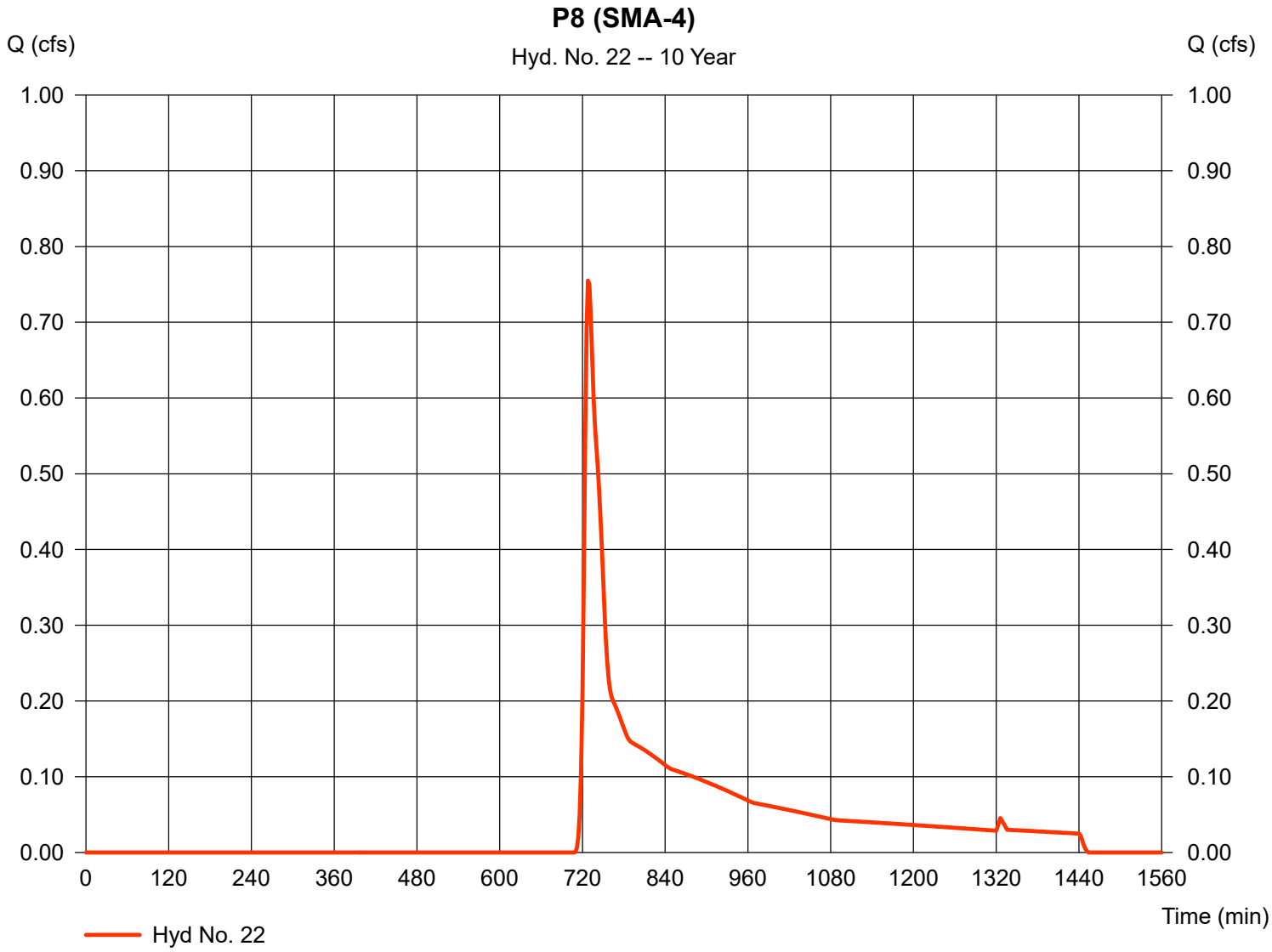
# Hydrograph Report



## Hyd. No. 22

P8 (SMA-4)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.755 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 728 min |
| Time interval | = | 2 min | Hyd. volume | = | 3,716 cuft |
| Drainage area | = | 1.460 ac | Curve number | = | 54.2 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 9.10 min |
| Total precip. | = | 4.50 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

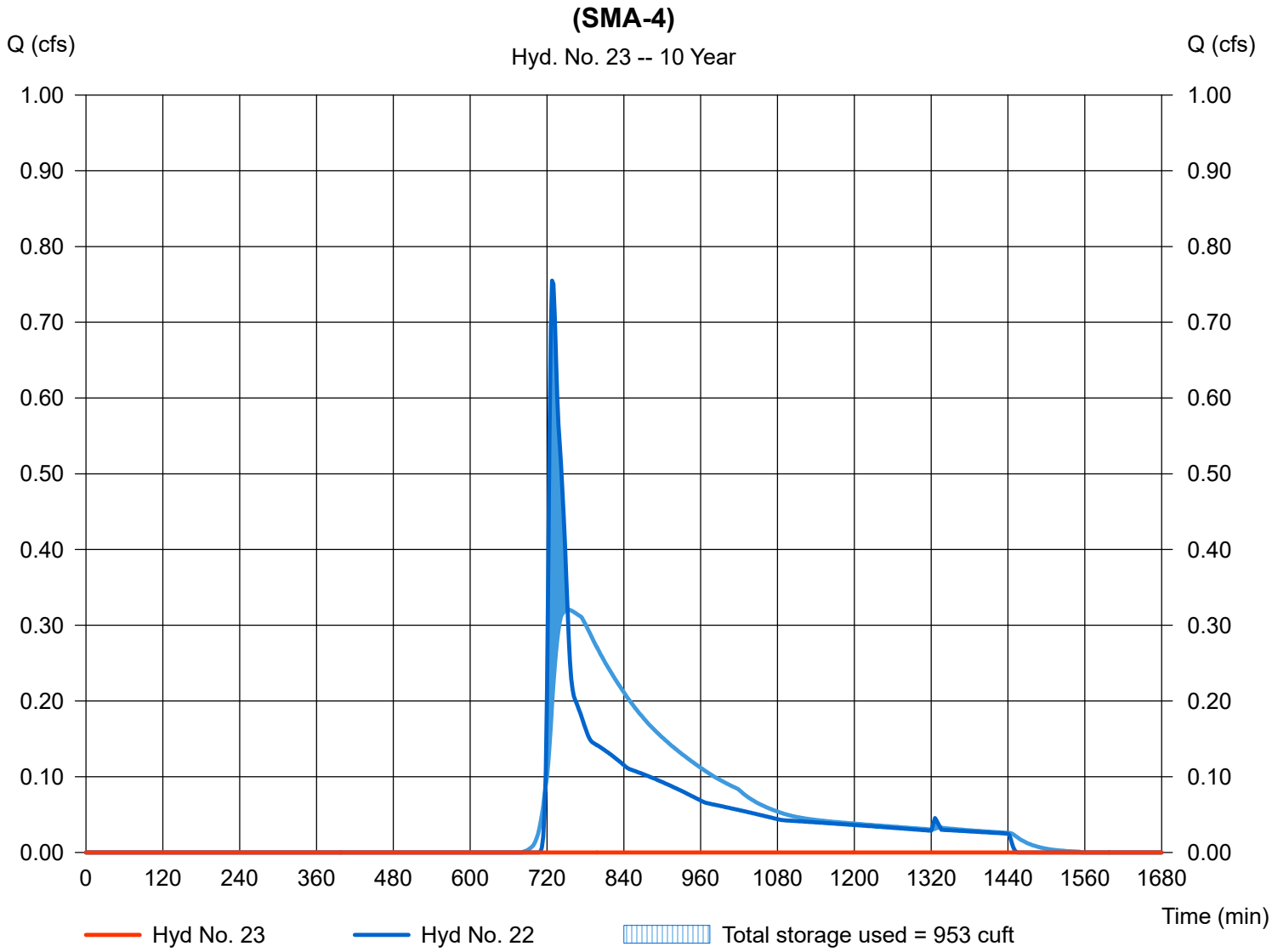


## Hyd. No. 23

(SMA-4)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 744 min |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Inflow hyd. No. | = | 22 - P8 (SMA-4) | Max. Elevation | = | 185.67 ft |
| Reservoir name | = | Inf. Basin (SMA-4) | Max. Storage | = | 953 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 4 - Inf. Basin (SMA-4)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 184.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 184.00 | 293 | 0 | 0 |
| 1.00 | 185.00 | 600 | 437 | 437 |
| 2.00 | 186.00 | 963 | 774 | 1,212 |
| 3.00 | 187.00 | 2,002 | 1,451 | 2,663 |
| 4.00 | 188.00 | 2,694 | 2,339 | 5,002 |
| 5.00 | 189.00 | 3,764 | 3,214 | 8,216 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 5.00 | 0.00 | 0.00 |
| **Span (in)** | = 12.00 | 5.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 2 | 0 | 0 |
| **Invert El. (ft)** | = 183.52 | 185.80 | 0.00 | 0.00 |
| **Length (ft)** | = 57.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 1.00 | 0.00 | 0.00 | n/a |
| **N-Value** | = .012 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | Yes | No | No |

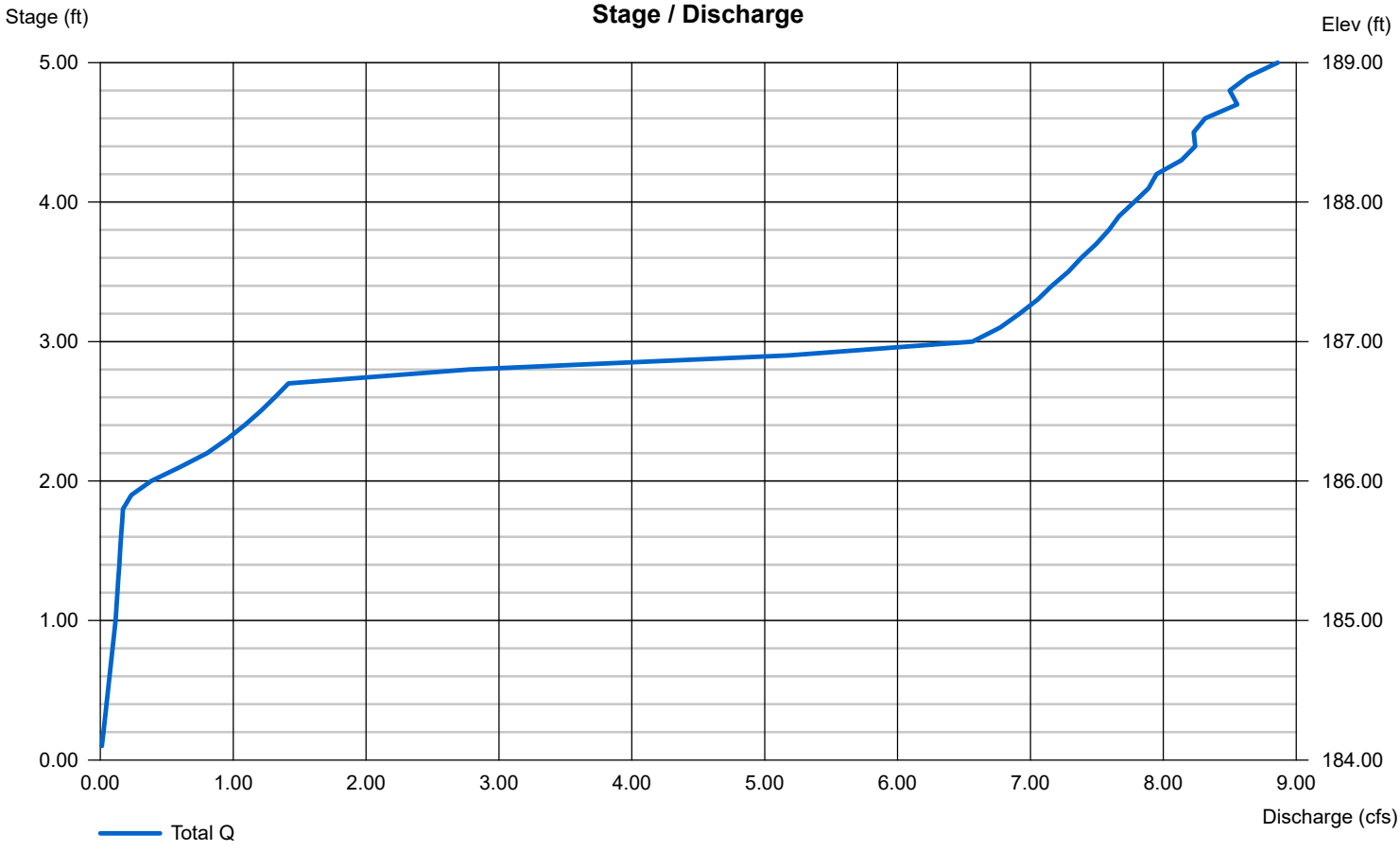
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | 0.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 186.70 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = Riser | --- | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



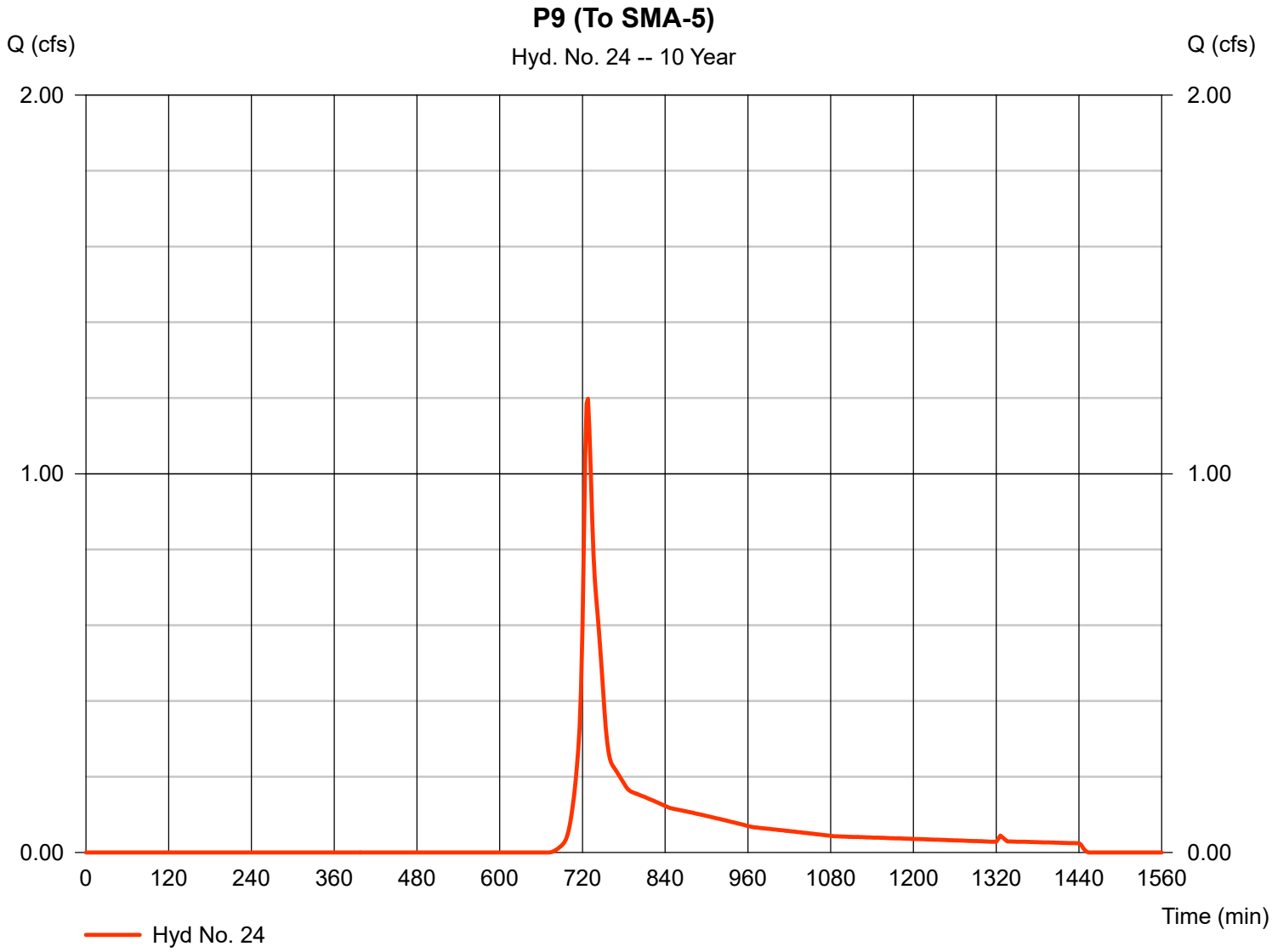
# Hydrograph Report



## Hyd. No. 24

P9 (To SMA-5)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 1.198 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 728 min |
| Time interval | = | 2 min | Hyd. volume | = | 4,558 cuft |
| Drainage area | = | 1.050 ac | Curve number | = | 62.9 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 7.30 min |
| Total precip. | = | 4.50 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

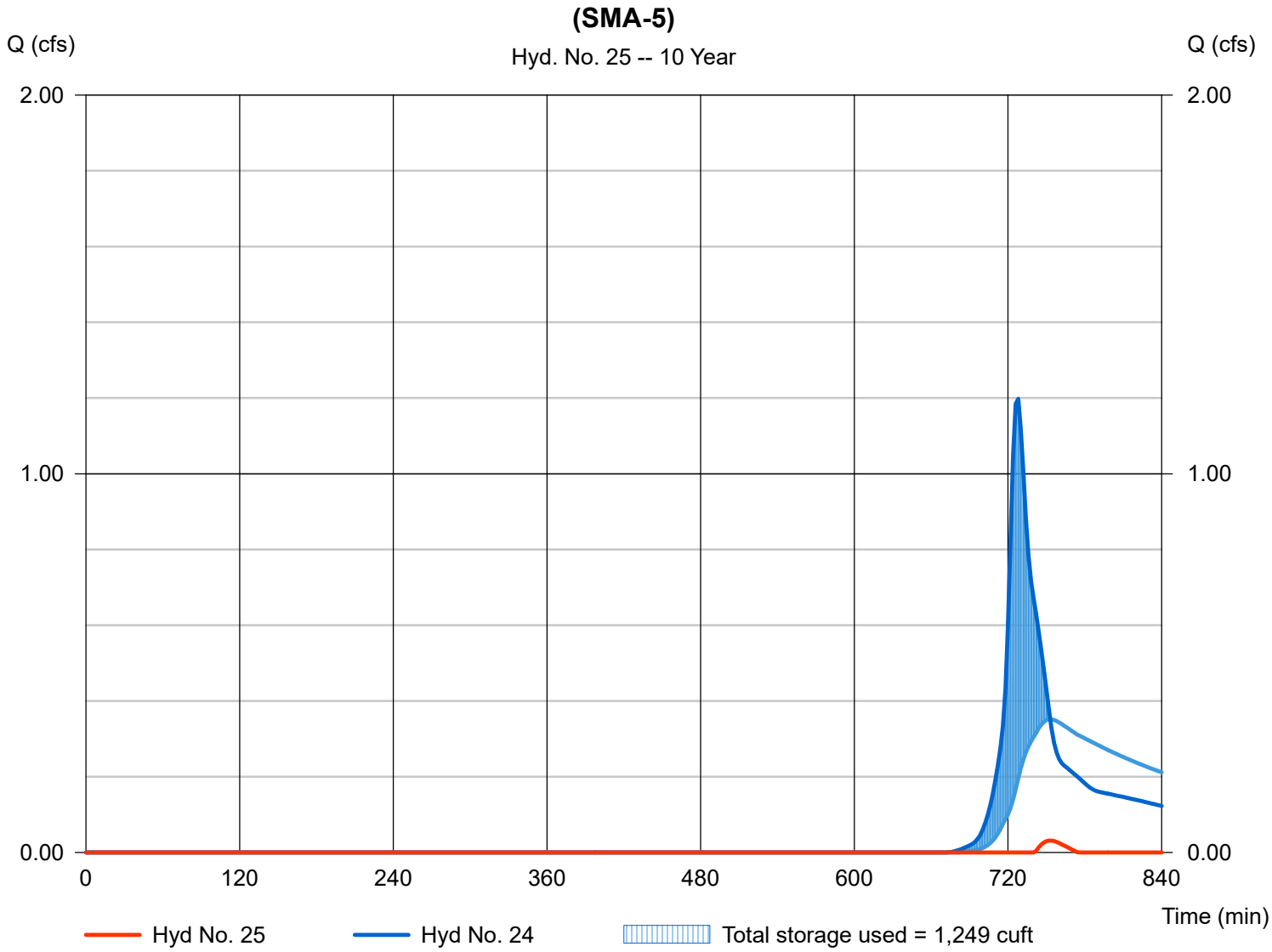


## Hyd. No. 25

(SMA-5)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.031 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 754 min |
| Time interval | = | 2 min | Hyd. volume | = | 38 cuft |
| Inflow hyd. No. | = | 24 - P9 (To SMA-5) | Max. Elevation | = | 185.06 ft |
| Reservoir name | = | Inf. Basin (SMA-5) | Max. Storage | = | 1,249 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



## Pond No. 7 - Inf. Basin (SMA-5)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 183.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 183.00 | 06 | 0 | 0 |
| 1.00 | 184.00 | 438 | 165 | 165 |
| 2.00 | 185.00 | 1,622 | 968 | 1,133 |
| 3.00 | 186.00 | 2,559 | 2,073 | 3,205 |
| 3.80 | 186.80 | 3,620 | 2,459 | 5,664 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 5.00 | 0.00 | 0.00 |
| **Span (in)** | = 12.00 | 5.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 2 | 0 | 0 |
| **Invert El. (ft)** | = 182.20 | 185.00 | 0.00 | 0.00 |
| **Length (ft)** | = 60.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 1.00 | 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 | No | No |

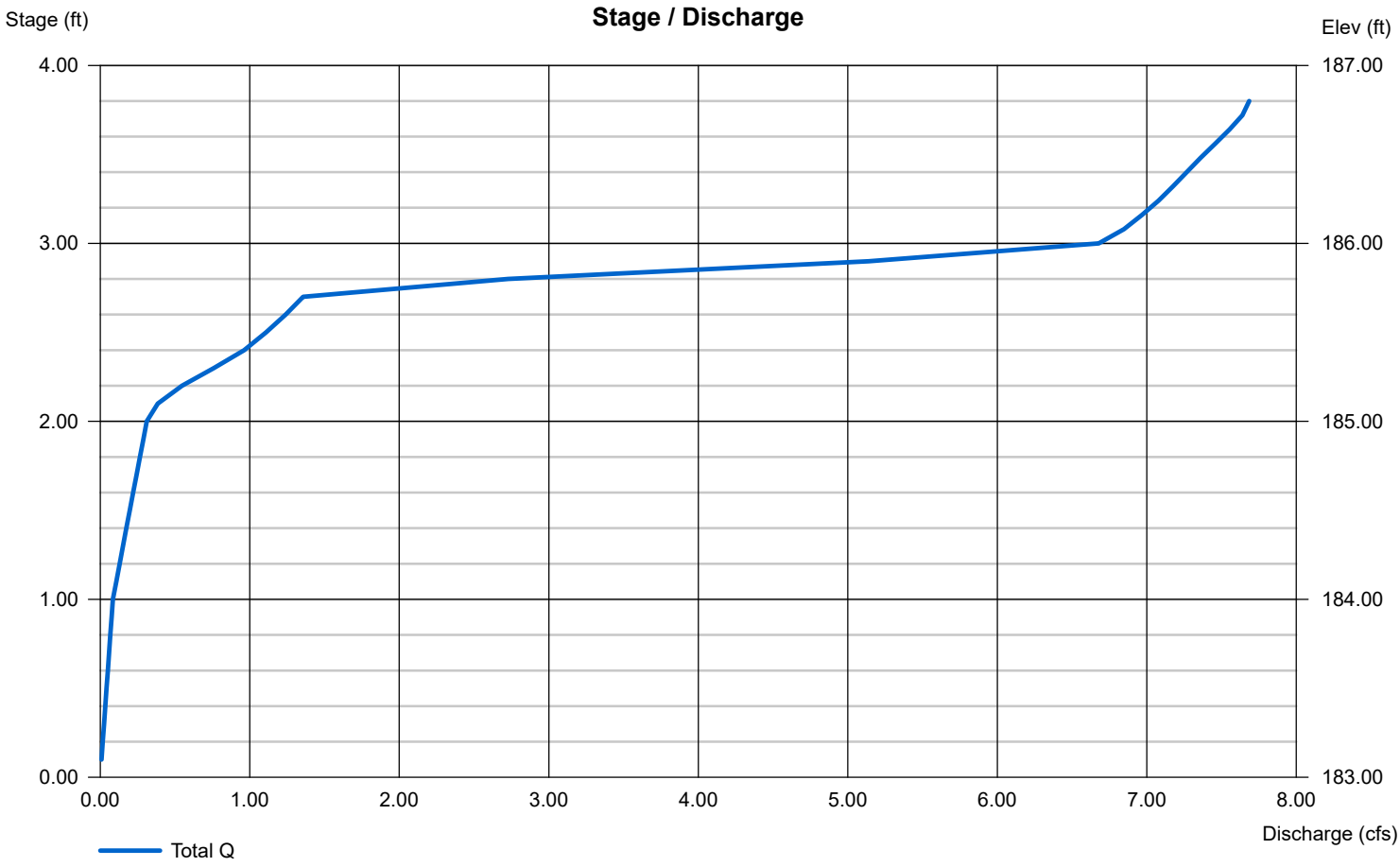
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | Inactive | 0.00 | 0.00 |
| **Crest El. (ft)** | = 185.70 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = Riser | Broad | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



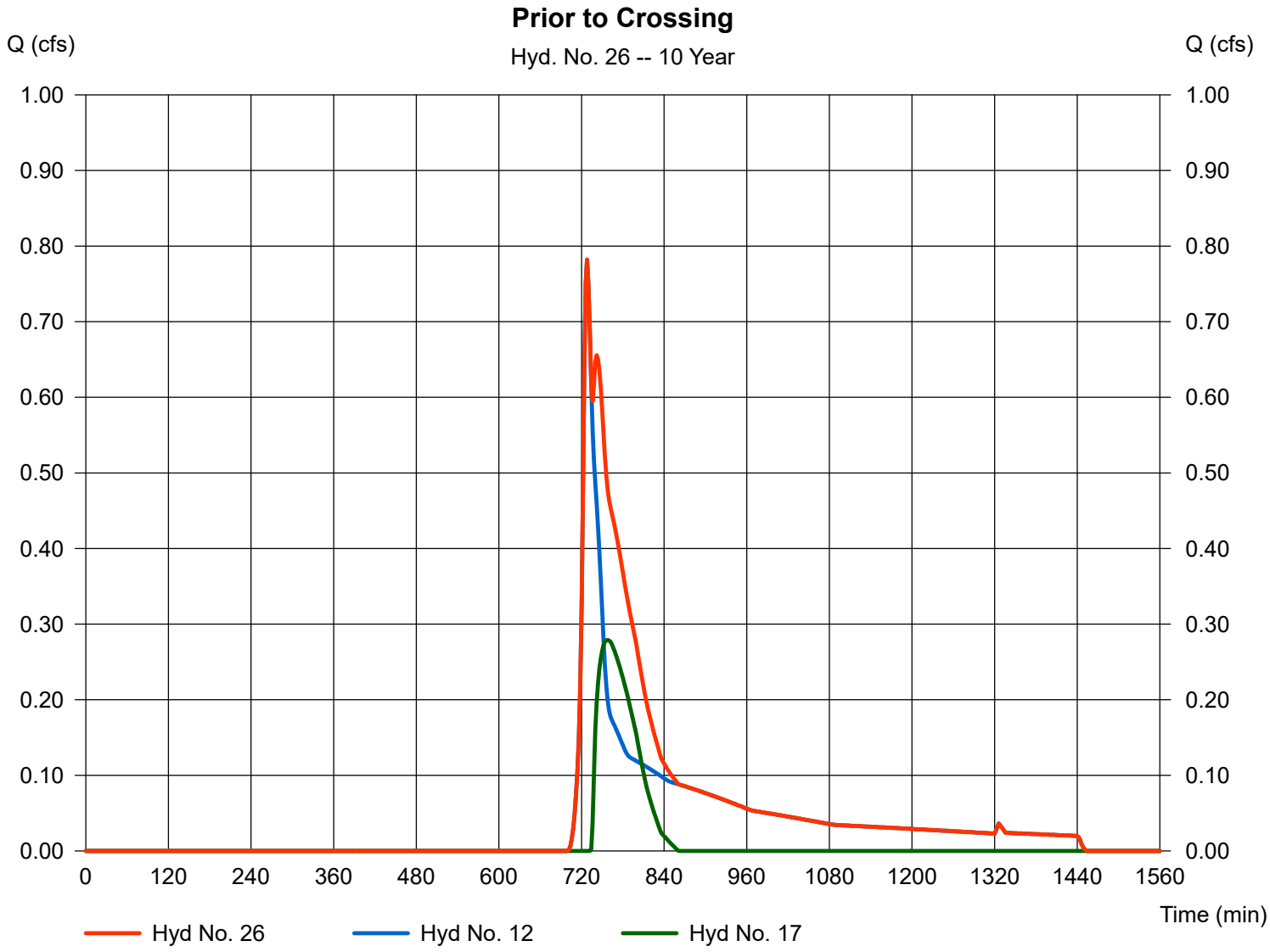
# Hydrograph Report



## Hyd. No. 26

Prior to Crossing

| | | | |
|---|---|---|---|
| Hydrograph type | = Combine | Peak discharge | = 0.782 cfs |
| Storm frequency | = 10 yrs | Time to peak | = 728 min |
| Time interval | = 2 min | Hyd. volume | = 4,349 cuft |
| Inflow hyds. | = 12, 17 | Contrib. drain. area | = 1.010 ac |



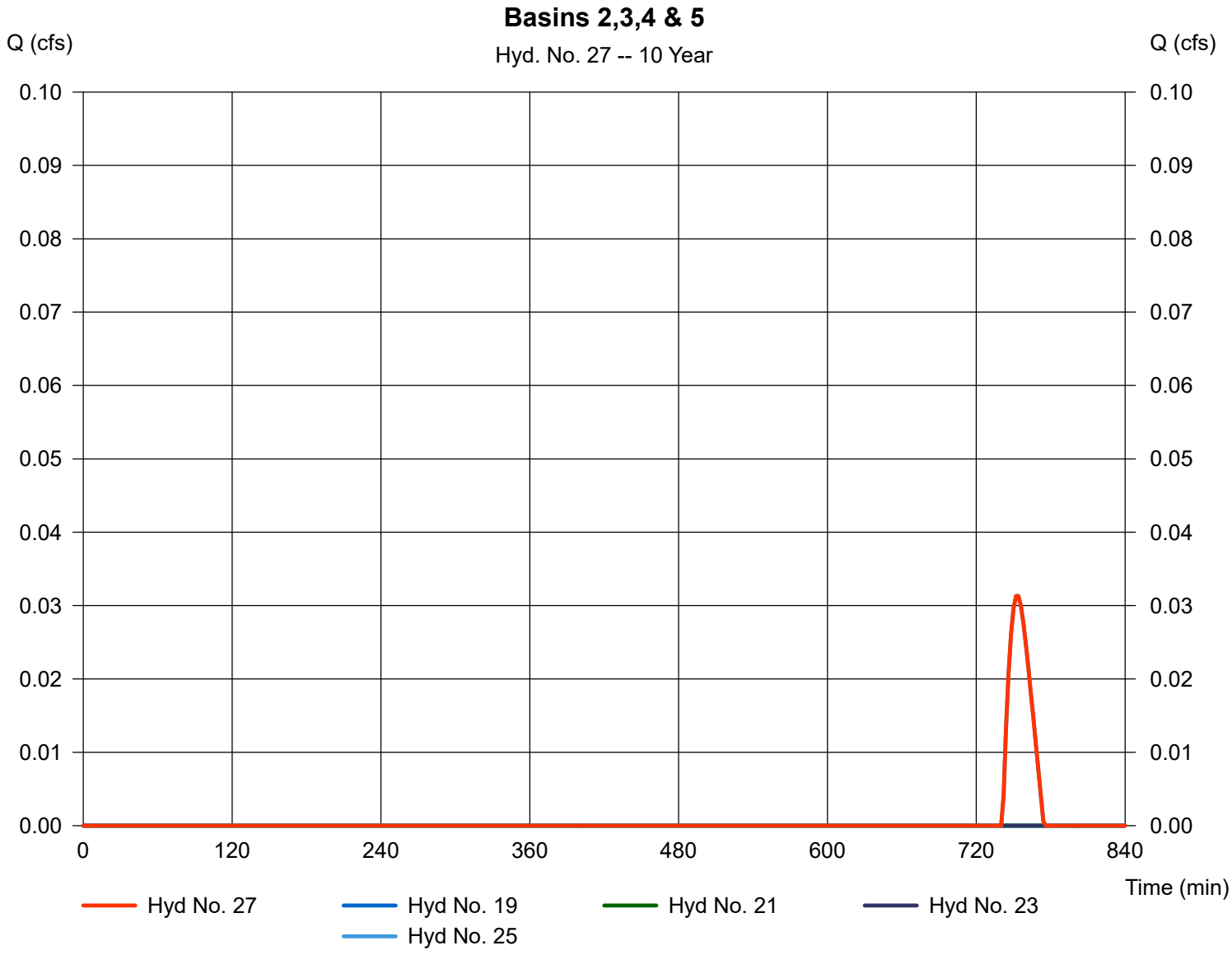
# Hydrograph Report



## Hyd. No. 27

Basins 2,3,4 & 5

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Combine | Peak discharge | = | 0.031 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 754 min |
| Time interval | = | 2 min | Hyd. volume | = | 38 cuft |
| Inflow hyds. | = | 19, 21, 23, 25 | Contrib. drain. area | = | 0.000 ac |



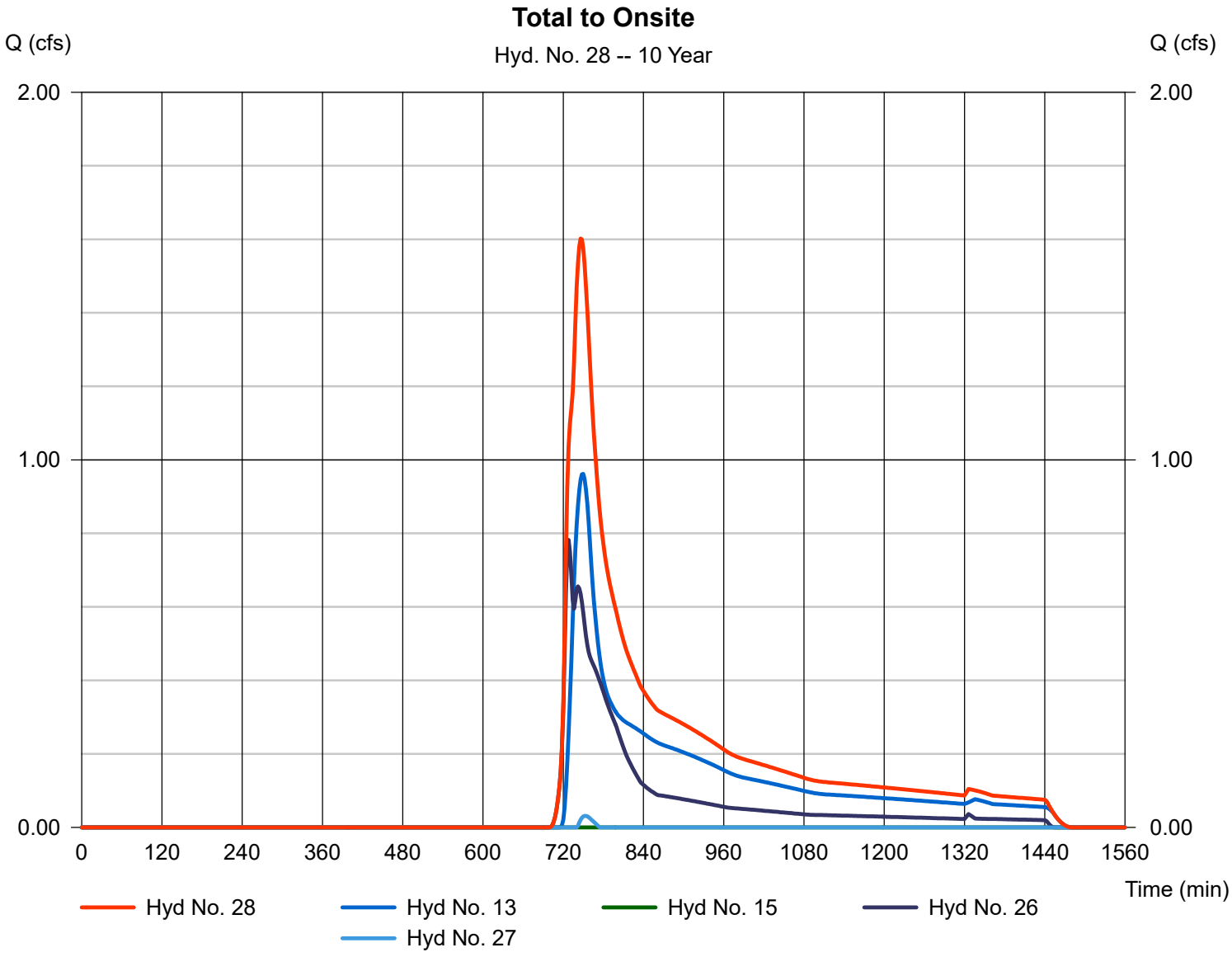
# Hydrograph Report



## Hyd. No. 28

Total to Onsite

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Combine | Peak discharge | = | 1.602 cfs |
| Storm frequency | = | 10 yrs | Time to peak | = | 746 min |
| Time interval | = | 2 min | Hyd. volume | = | 11,703 cuft |
| Inflow hyds. | = | 13, 15, 26, 27 | Contrib. drain. area | = | 3.660 ac |



# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

| 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 | 0.003 | 2 | 1332 | 52 | ---- | ------ | ------ | E1 |
| 2 | SCS Runoff | 3.661 | 2 | 732 | 16,683 | ---- | ------ | ------ | E2 |
| 3 | SCS Runoff | 1.390 | 2 | 754 | 13,739 | ---- | ------ | ------ | E3 |
| 4 | Combine | 4.143 | 2 | 736 | 30,422 | 2, 3 | ------ | ------ | Total to Onsite |
| 6 | SCS Runoff | 46.37 | 2 | 736 | 222,932 | ---- | ------ | ------ | Offsite to Exist 15-inch Culvert |
| 7 | SCS Runoff | 20.54 | 2 | 732 | 84,802 | ---- | ------ | ------ | Town Drain Outlet to PL |
| 8 | Combine | 69.11 | 2 | 734 | 324,417 | 2, 6, 7 | ------ | ------ | Total to 15 inch culvert |
| 10 | SCS Runoff | 0.043 | 2 | 760 | 870 | ---- | ------ | ------ | P1 |
| 11 | Reservoir | 0.000 | 2 | 796 | 0 | 10 | 195.23 | 119 | WQ Swale(SMA-6) |
| 12 | SCS Runoff | 1.262 | 2 | 728 | 4,878 | ---- | ------ | ------ | P2 |
| 13 | SCS Runoff | 1.827 | 2 | 746 | 11,734 | ---- | ------ | ------ | P3 |
| 14 | SCS Runoff | 0.345 | 2 | 724 | 1,189 | ---- | ------ | ------ | P4 |
| 15 | Reservoir | 0.000 | 2 | 458 | 0 | 14 | 1.63 | 263 | Roof Drywell Lot 7 |
| 16 | SCS Runoff | 3.102 | 2 | 732 | 12,979 | ---- | ------ | ------ | P5 (To SMA-1) |
| 17 | Reservoir | 0.760 | 2 | 754 | 2,704 | 16 | 203.41 | 4,018 | SMA-1 |
| 18 | SCS Runoff | 1.133 | 2 | 734 | 5,417 | ---- | ------ | ------ | P6 (To SMA-2) |
| 19 | Reservoir | 0.000 | 2 | 796 | 0 | 18 | 197.82 | 1,662 | SMA-2 |
| 20 | SCS Runoff | 2.685 | 2 | 726 | 9,522 | ---- | ------ | ------ | P7 (SMA-3) |
| 21 | Reservoir | 0.042 | 2 | 752 | 52 | 20 | 191.04 | 3,136 | (SMA-3) |
| 22 | SCS Runoff | 1.371 | 2 | 728 | 5,727 | ---- | ------ | ------ | P8 (SMA-4) |
| 23 | Reservoir | 0.391 | 2 | 748 | 859 | 22 | 186.10 | 1,353 | (SMA-4) |
| 24 | SCS Runoff | 1.771 | 2 | 726 | 6,459 | ---- | ------ | ------ | P9 (To SMA-5) |
| 25 | Reservoir | 0.355 | 2 | 746 | 700 | 24 | 185.28 | 1,711 | (SMA-5) |
| 26 | Combine | 1.268 | 2 | 728 | 7,582 | 12, 17, | ------ | ------ | Prior to Crossing |
| 27 | Combine | 0.779 | 2 | 748 | 1,611 | 19, 21, 23, 25, | ------ | ------ | Basins 2,3,4 & 5 |
| 28 | Combine | 3.801 | 2 | 748 | 20,926 | 13, 15, 26, 27 | ------ | ------ | Total to Onsite |
| 30 | Combine | 66.41 | 2 | 734 | 312,612 | 6, 7, 12, | ------ | ------ | Post to Open Box Culvert |

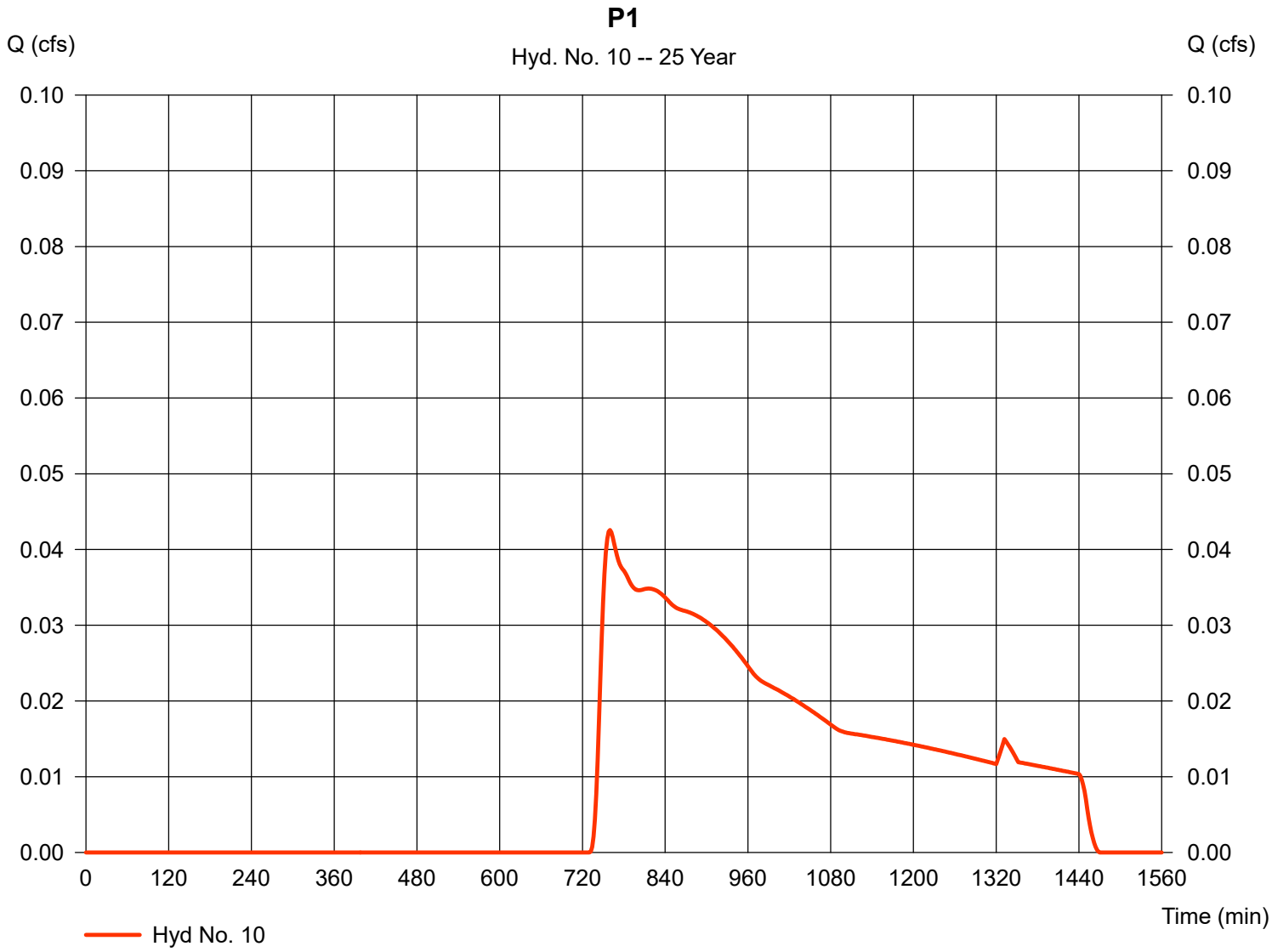
# Hydrograph Report



## Hyd. No. 10

P1

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.043 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 760 min |
| Time interval | = | 2 min | Hyd. volume | = | 870 cuft |
| Drainage area | = | 1.060 ac | Curve number | = | 38 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 18.80 min |
| Total precip. | = | 5.30 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

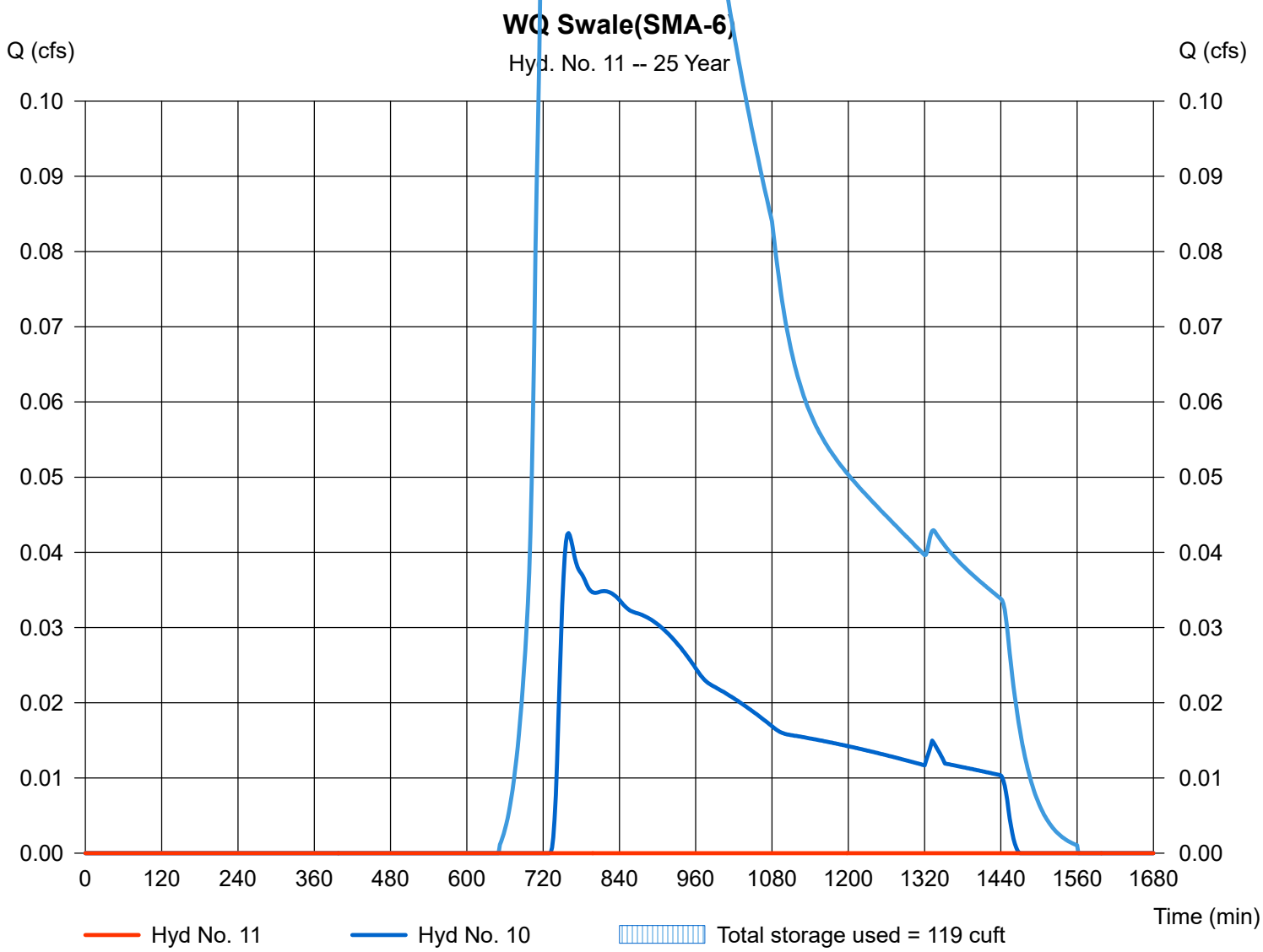


## Hyd. No. 11

WQ Swale(SMA-6)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 796 min |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Inflow hyd. No. | = | 10 - P1 | Max. Elevation | = | 195.23 ft |
| Reservoir name | = | WQS (SMA-6) | Max. Storage | = | 119 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 6 - WQS (SMA-6)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 195.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 195.00 | 378 | 0 | 0 |
| 1.00 | 196.00 | 692 | 527 | 527 |
| 2.00 | 197.00 | 1,109 | 892 | 1,419 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Span (in)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **No. Barrels** | = 0 | 0 | 0 | 0 |
| **Invert El. (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Length (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 0.00 | 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 | No | No | No |

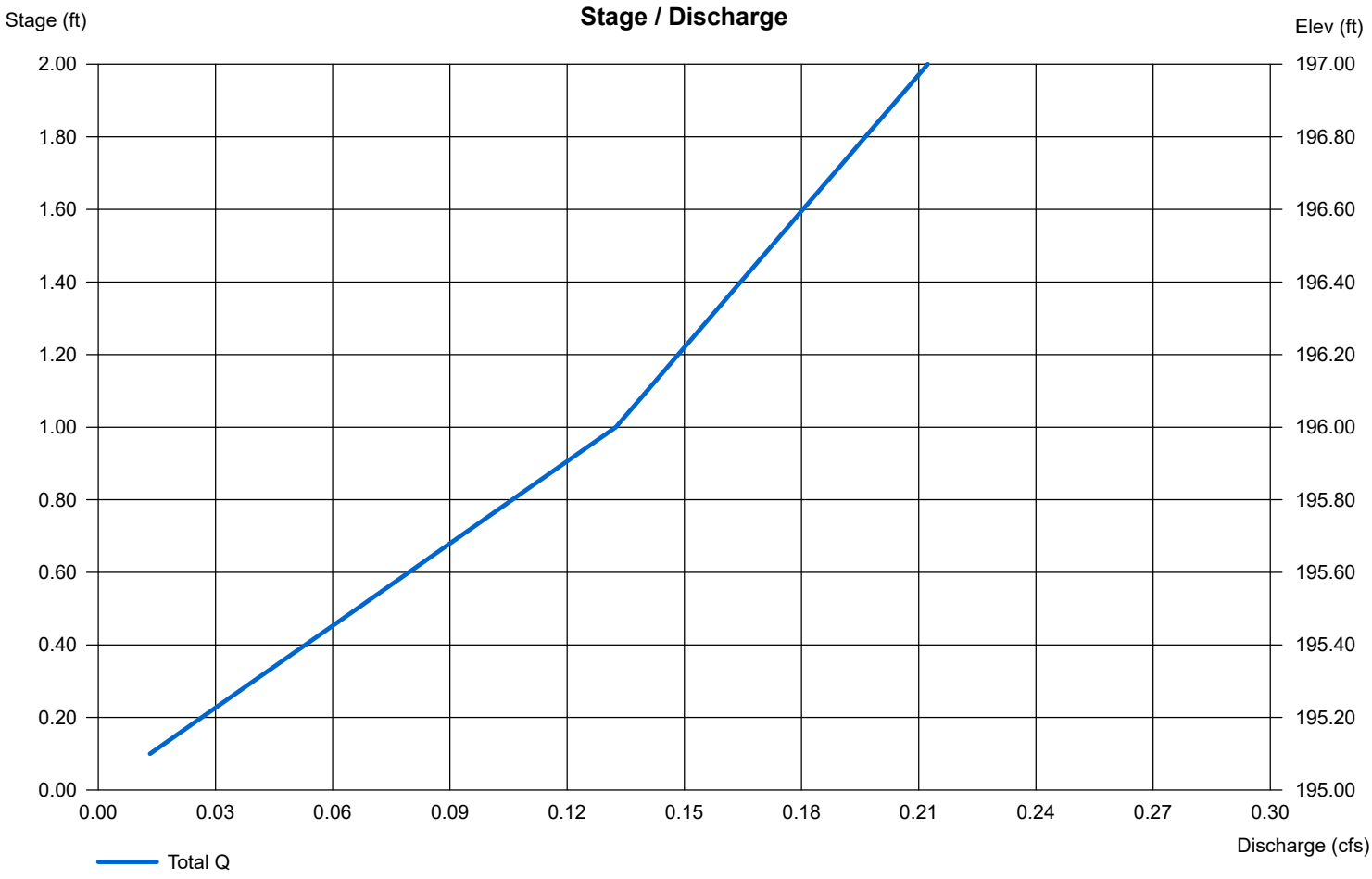
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 4.00 | 0.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 197.00 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 2.60 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = Broad | --- | --- | --- |
| **Multi-Stage** | = No | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



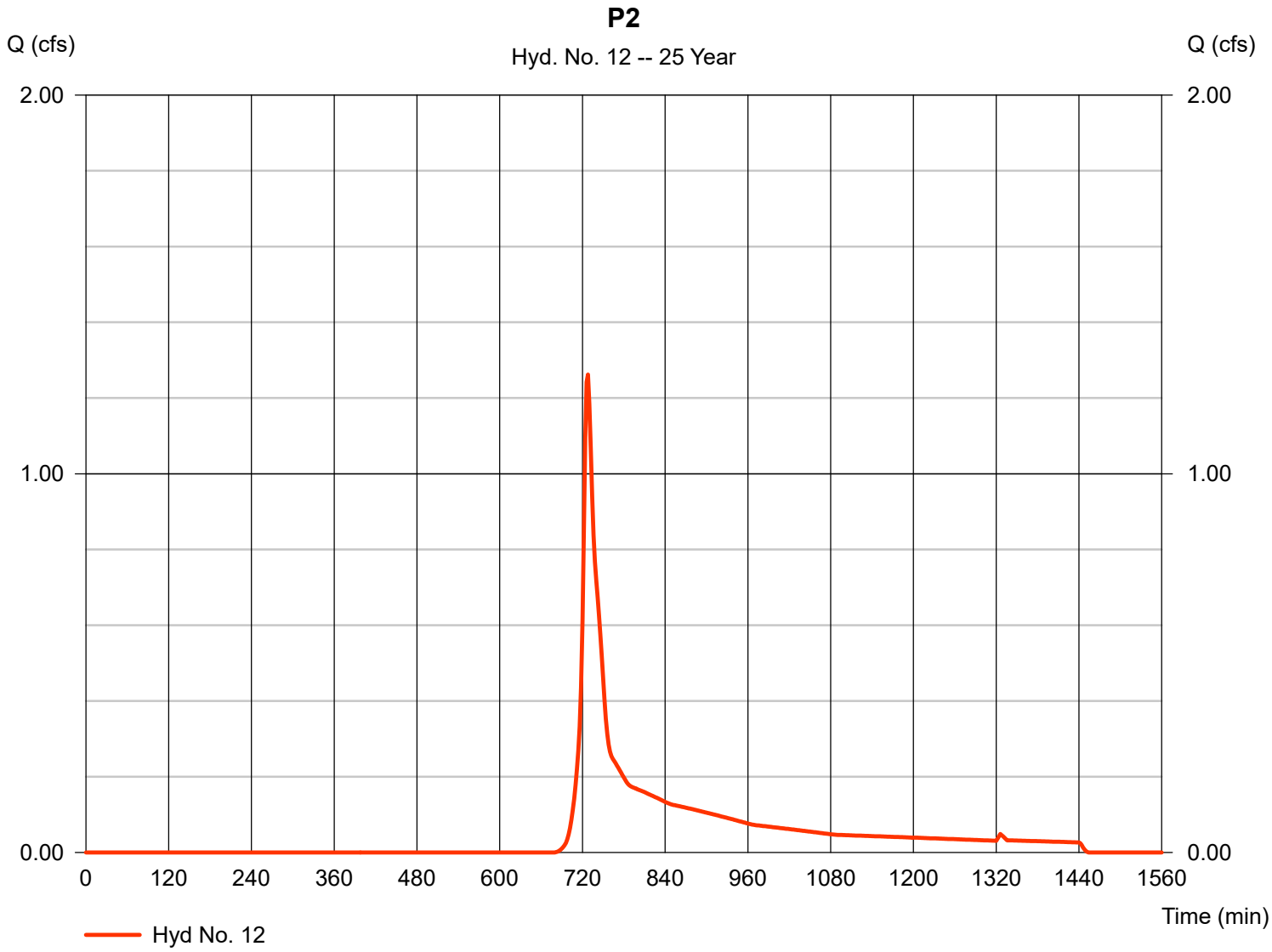
# Hydrograph Report



## Hyd. No. 12

P2

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 1.262 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 728 min |
| Time interval | = | 2 min | Hyd. volume | = | 4,878 cuft |
| Drainage area | = | 1.010 ac | Curve number | = | 57.9 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 9.60 min |
| Total precip. | = | 5.30 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



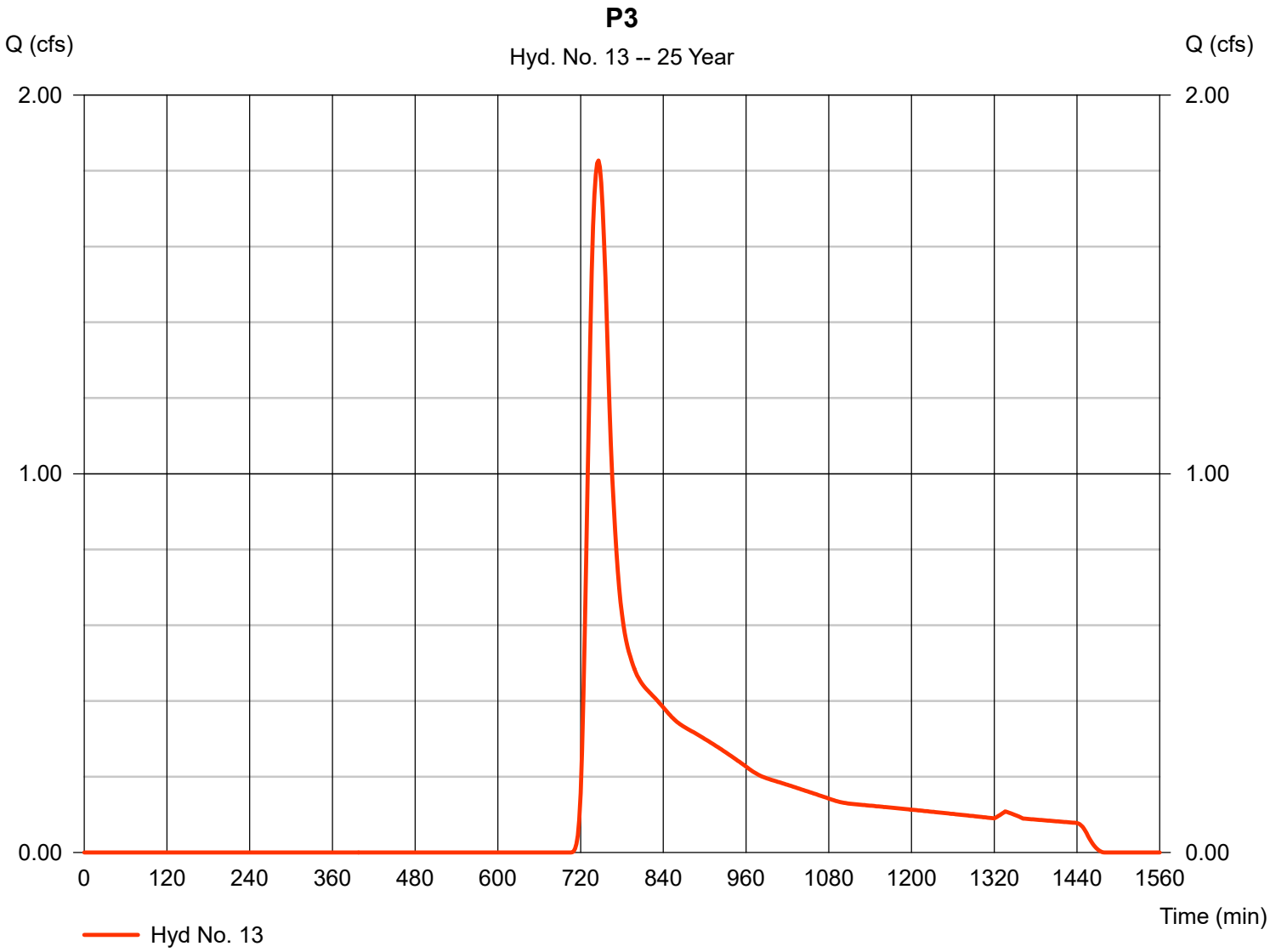
# Hydrograph Report



## Hyd. No. 13

P3

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 1.827 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 746 min |
| Time interval | = | 2 min | Hyd. volume | = | 11,734 cuft |
| Drainage area | = | 3.660 ac | Curve number | = | 51.3 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 24.70 min |
| Total precip. | = | 5.30 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



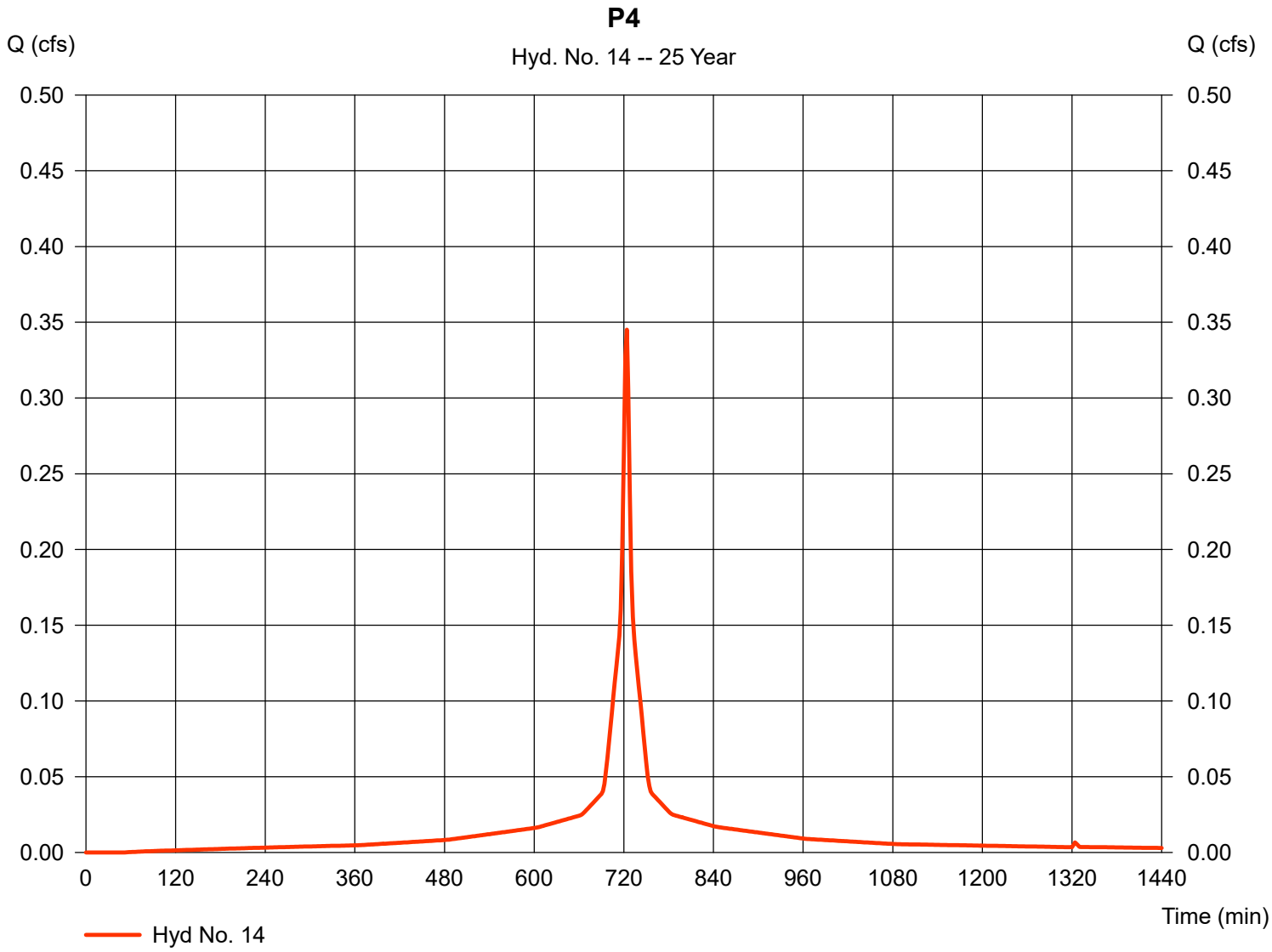
# Hydrograph Report



## Hyd. No. 14

P4

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.345 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 724 min |
| Time interval | = | 2 min | Hyd. volume | = | 1,189 cuft |
| Drainage area | = | 0.069 ac | Curve number | = | 98 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 6.00 min |
| Total precip. | = | 5.30 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

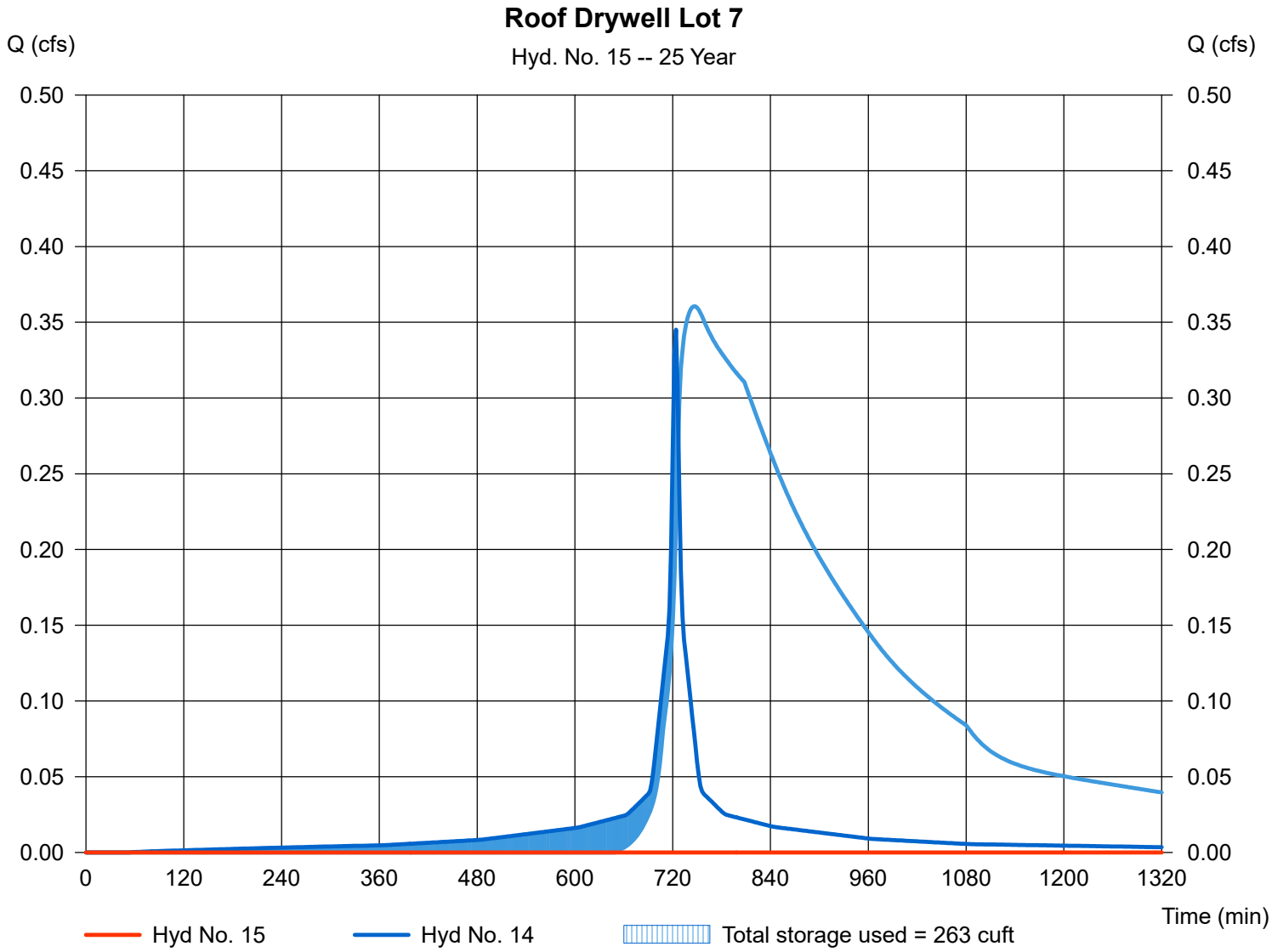


## Hyd. No. 15

Roof Drywell Lot 7

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 458 min |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Inflow hyd. No. | = | 14 - P4 | Max. Elevation | = | 1.63 ft |
| Reservoir name | = | SC-310 Drywell | Max. Storage | = | 263 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



## Pond No. 9 - SC-310 Drywell

### Pond Data

**UG Chambers -** Invert elev. = 0.50 ft, Rise x Span = 1.33 x 2.83 ft, Barrel Len = 21.35 ft, No. Barrels = 3, Slope = 0.00%, Headers = No
**Encasement -** Invert elev. = 0.01 ft, Width = 3.83 ft, Height = 2.50 ft, Voids = 40.00%

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 0.01 | n/a | 0 | 0 |
| 0.25 | 0.26 | n/a | 25 | 25 |
| 0.50 | 0.51 | n/a | 26 | 50 |
| 0.75 | 0.76 | n/a | 52 | 102 |
| 1.00 | 1.01 | n/a | 51 | 152 |
| 1.25 | 1.26 | n/a | 48 | 201 |
| 1.50 | 1.51 | n/a | 45 | 245 |
| 1.75 | 1.76 | n/a | 38 | 284 |
| 2.00 | 2.01 | n/a | 26 | 310 |
| 2.25 | 2.26 | n/a | 25 | 334 |
| 2.50 | 2.51 | n/a | 25 | 359 |

### Culvert / Orifice Structures

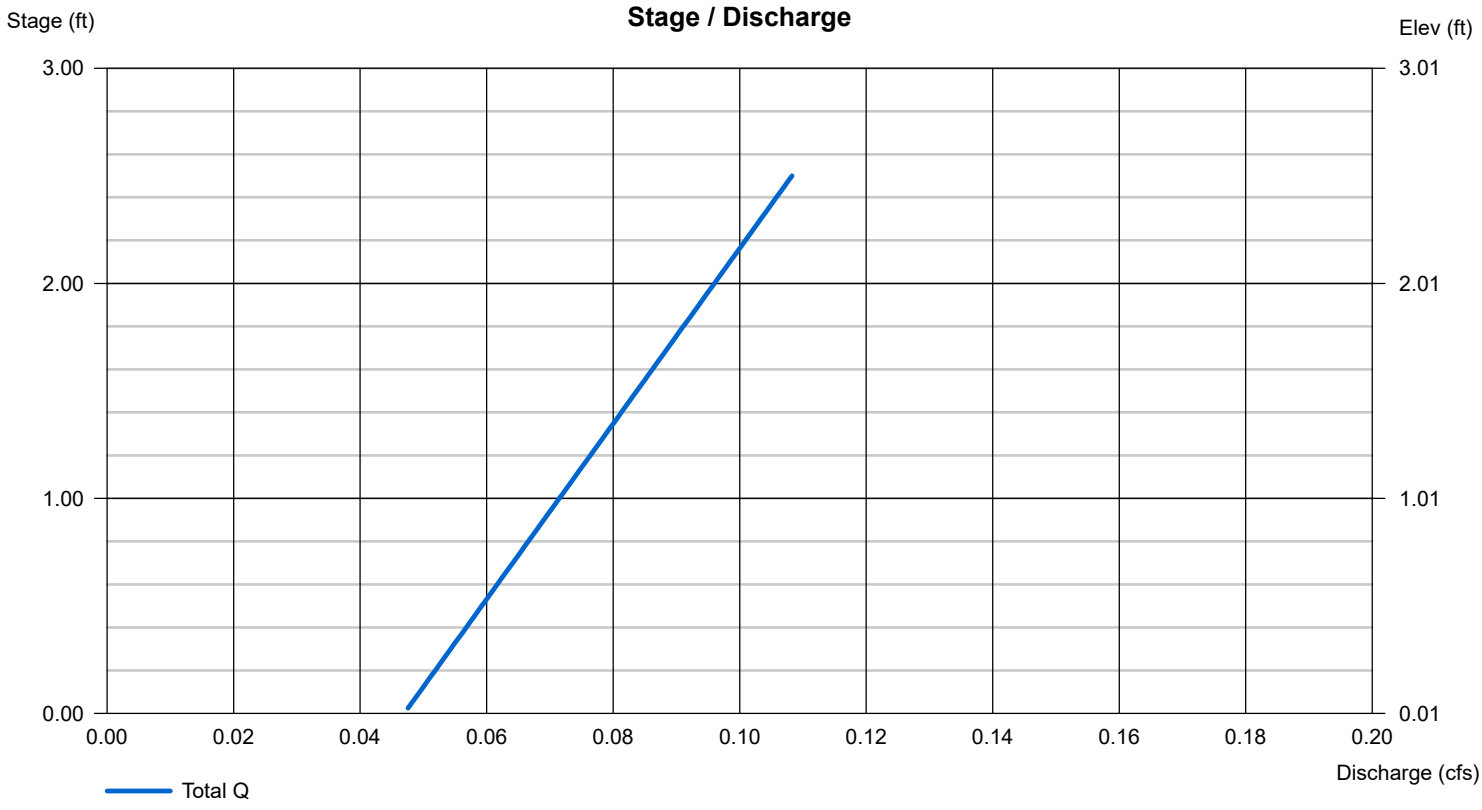
| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Span (in)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **No. Barrels** | = 0 | 0 | 0 | 0 |
| **Invert El. (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Length (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 0.00 | 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 | No | No | No |

### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = --- | --- | --- | --- |
| **Multi-Stage** | = No | No | No | No |

**Exfil.(in/hr)** = 8.270 (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).



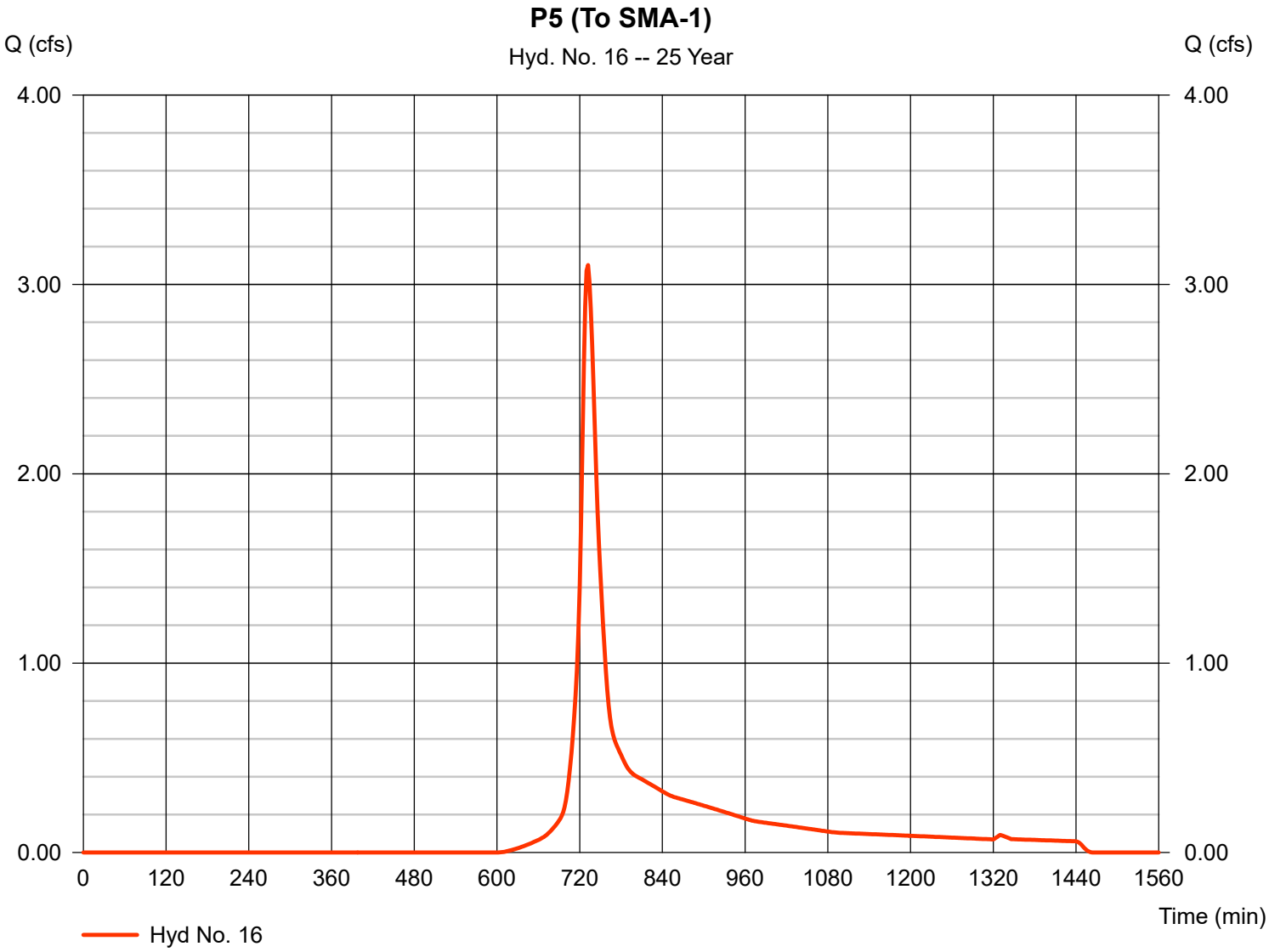
# Hydrograph Report



## Hyd. No. 16

P5 (To SMA-1)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 3.102 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 732 min |
| Time interval | = | 2 min | Hyd. volume | = | 12,979 cuft |
| Drainage area | = | 1.820 ac | Curve number | = | 67 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 15.80 min |
| Total precip. | = | 5.30 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

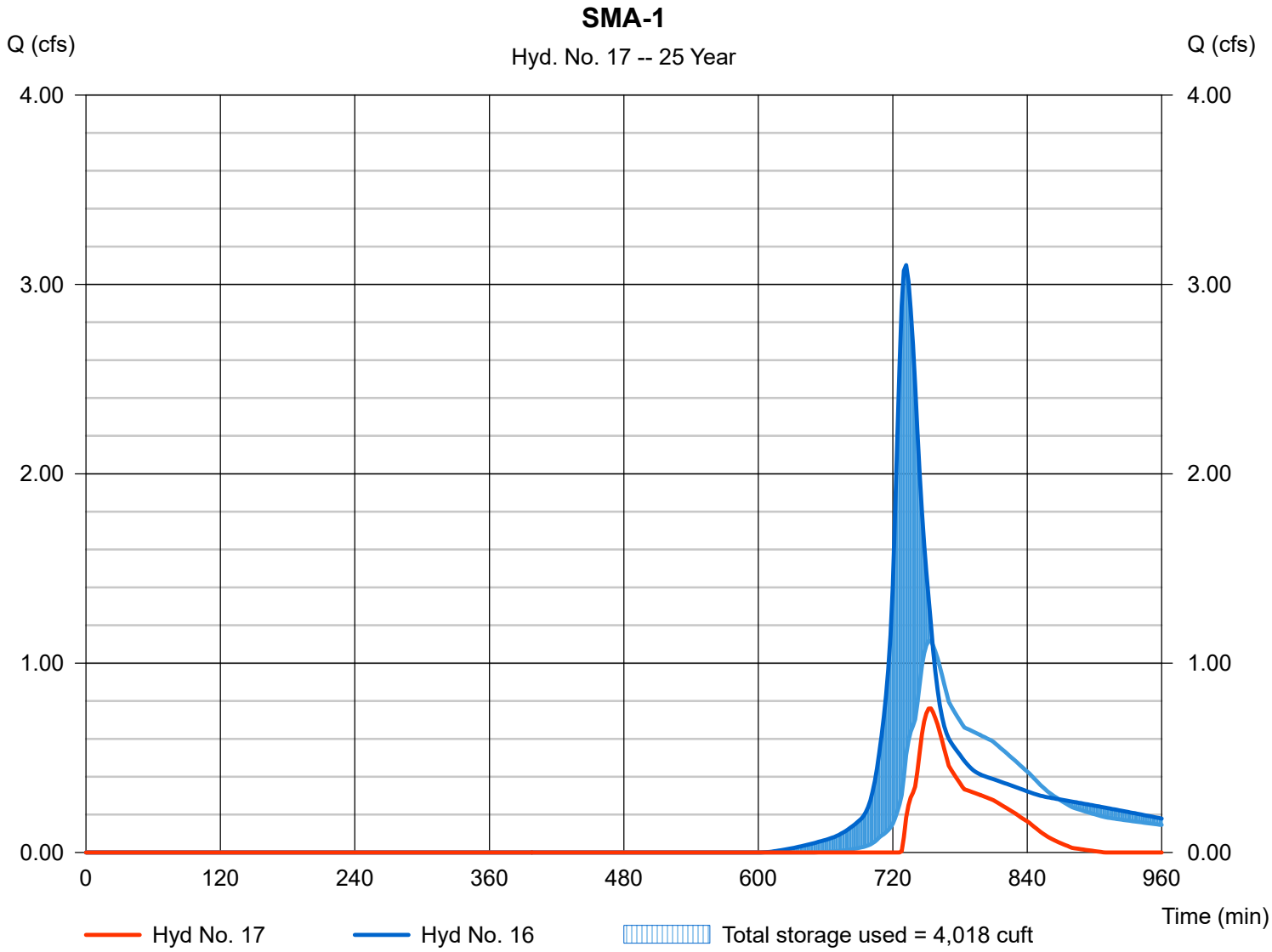


## Hyd. No. 17

SMA-1

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.760 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 754 min |
| Time interval | = | 2 min | Hyd. volume | = | 2,704 cuft |
| Inflow hyd. No. | = | 16 - P5 (To SMA-1) | Max. Elevation | = | 203.41 ft |
| Reservoir name | = | Inf. Basin (SMA-1) | Max. Storage | = | 4,018 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 8 - Inf. Basin (SMA-1)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 201.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 201.00 | 768 | 0 | 0 |
| 1.00 | 202.00 | 1,386 | 1,062 | 1,062 |
| 2.00 | 203.00 | 2,337 | 1,841 | 2,903 |
| 3.00 | 204.00 | 3,131 | 2,724 | 5,627 |
| 4.00 | 205.00 | 3,473 | 3,300 | 8,927 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 4.00 | 6.00 | 0.00 |
| **Span (in)** | = 12.00 | 4.00 | 6.00 | 0.00 |
| **No. Barrels** | = 1 | 1 | 3 | 0 |
| **Invert El. (ft)** | = 199.96 | 202.40 | 203.20 | 0.00 |
| **Length (ft)** | = 55.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 1.70 | 0.00 | 0.00 | n/a |
| **N-Value** | = .012 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | Yes | Yes | No |

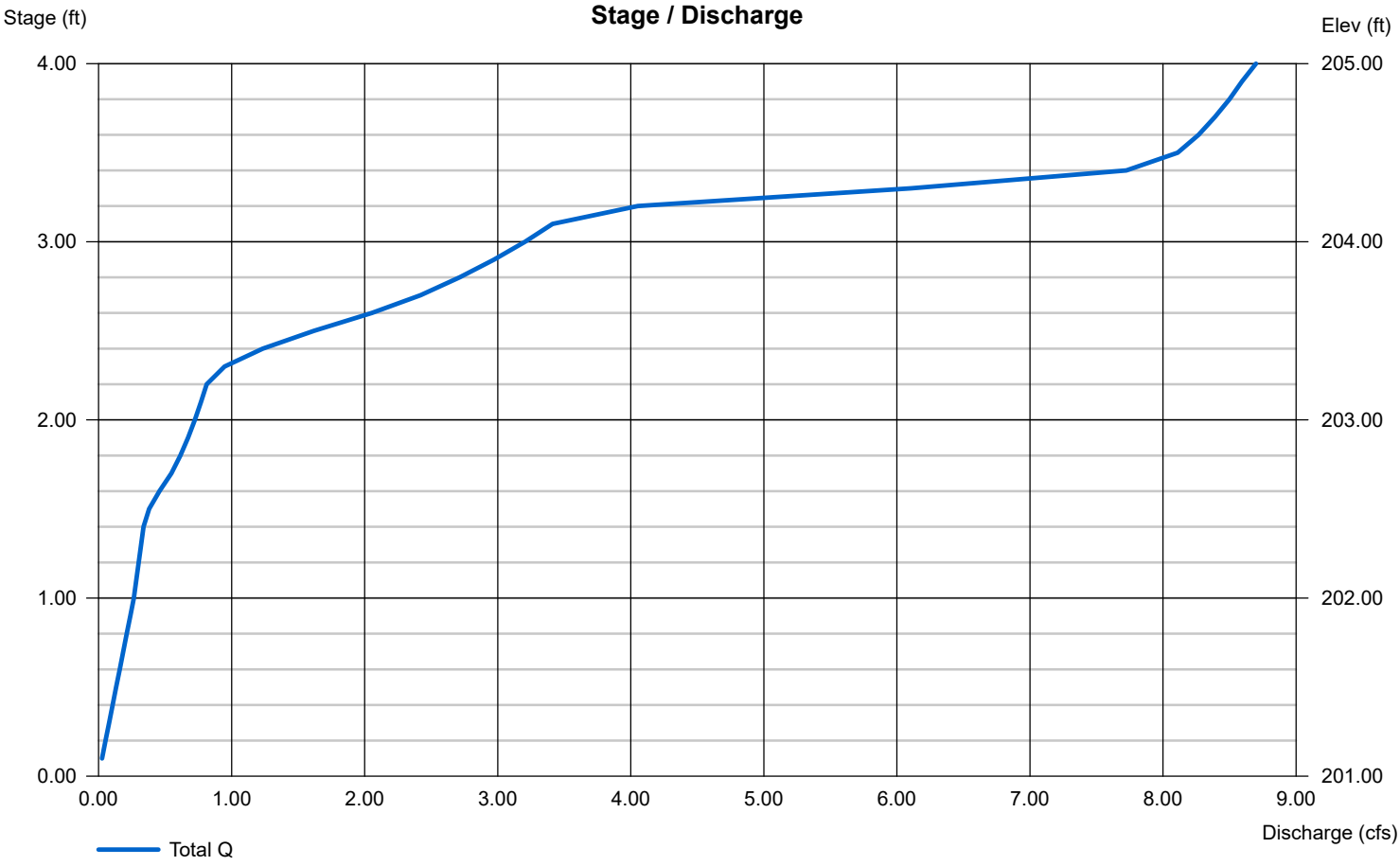
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 204.15 | 205.25 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 2.60 | 3.33 | 3.33 |
| **Weir Type** | = Riser | Broad | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



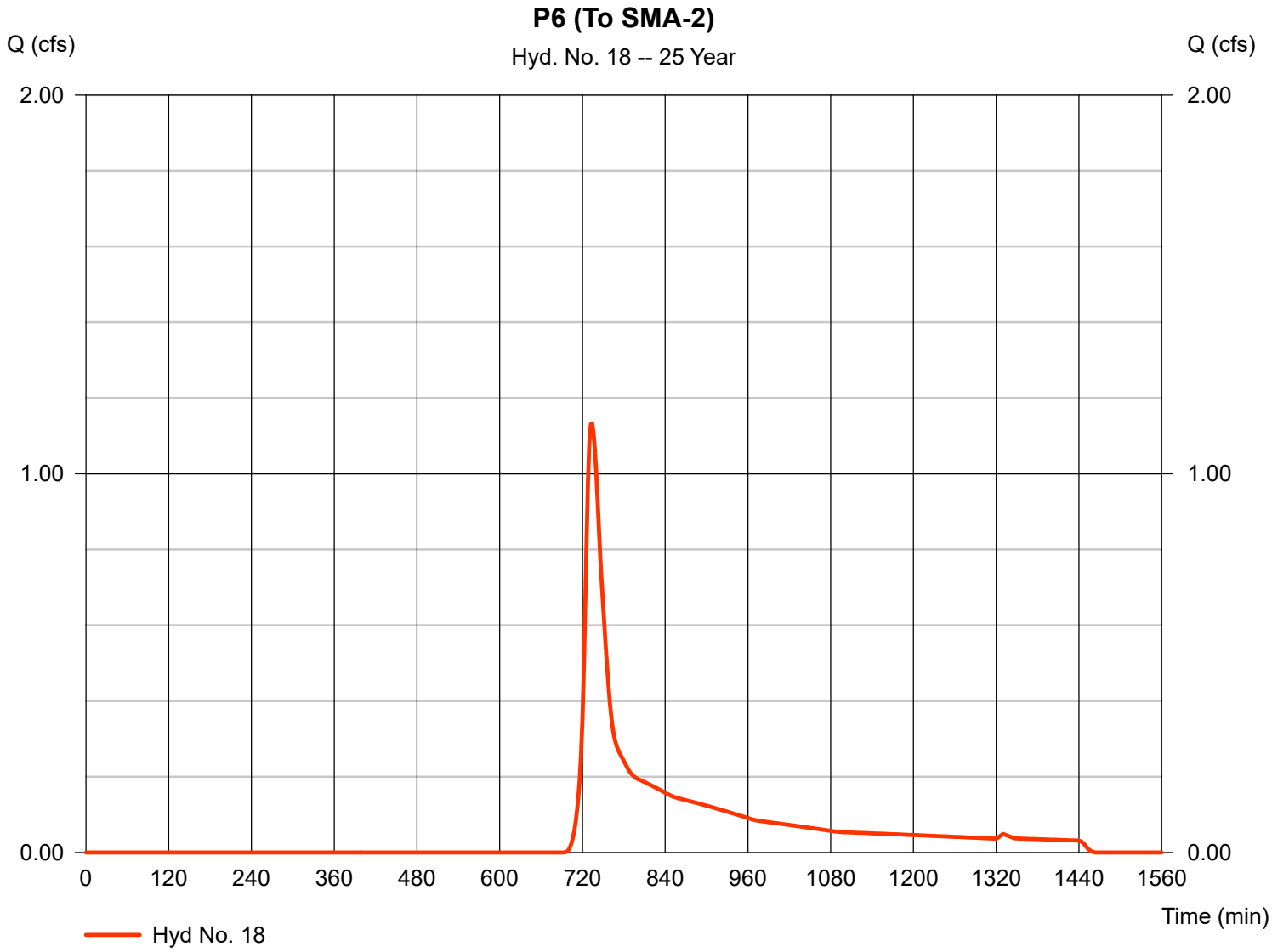
# Hydrograph Report



## Hyd. No. 18

P6 (To SMA-2)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 1.133 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 734 min |
| Time interval | = | 2 min | Hyd. volume | = | 5,417 cuft |
| Drainage area | = | 1.290 ac | Curve number | = | 55.8 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 16.40 min |
| Total precip. | = | 5.30 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

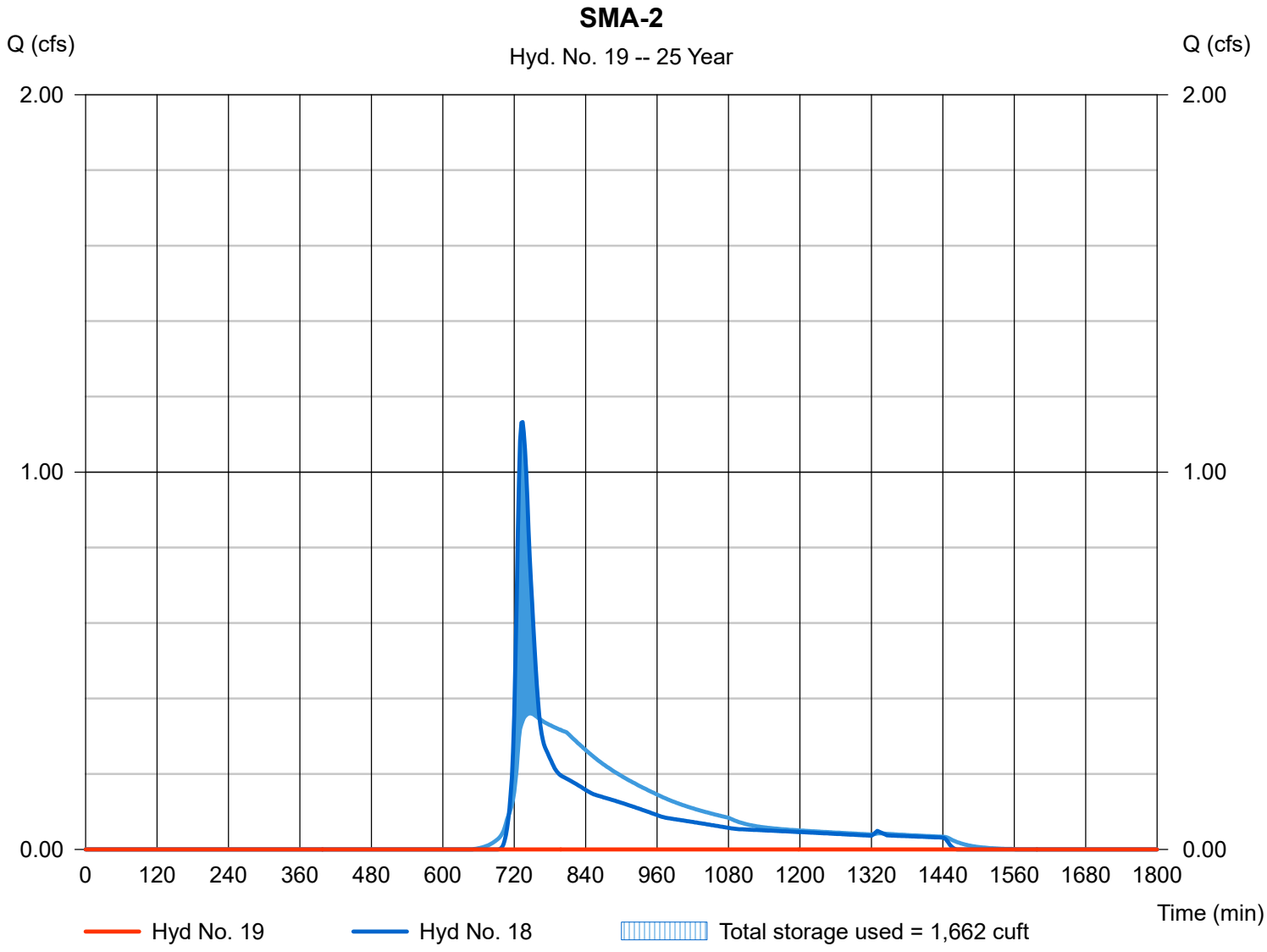


## Hyd. No. 19

SMA-2

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 796 min |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Inflow hyd. No. | = | 18 - P6 (To SMA-2) | Max. Elevation | = | 197.82 ft |
| Reservoir name | = | Inf. Basin (SMA-2) | Max. Storage | = | 1,662 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 1 - Inf. Basin (SMA-2)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 196.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 196.00 | 553 | 0 | 0 |
| 1.00 | 197.00 | 922 | 730 | 730 |
| 2.00 | 198.00 | 1,357 | 1,132 | 1,862 |
| 3.00 | 199.00 | 2,775 | 2,024 | 3,886 |
| 4.00 | 200.00 | 3,494 | 3,127 | 7,013 |
| 5.00 | 201.00 | 6,124 | 4,747 | 11,761 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **Span (in)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 3 | 0 | 0 |
| **Invert El. (ft)** | = 195.46 | 198.01 | 0.00 | 0.00 |
| **Length (ft)** | = 22.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 6.00 | 0.00 | 0.00 | n/a |
| **N-Value** | = .012 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | Yes | No | No |

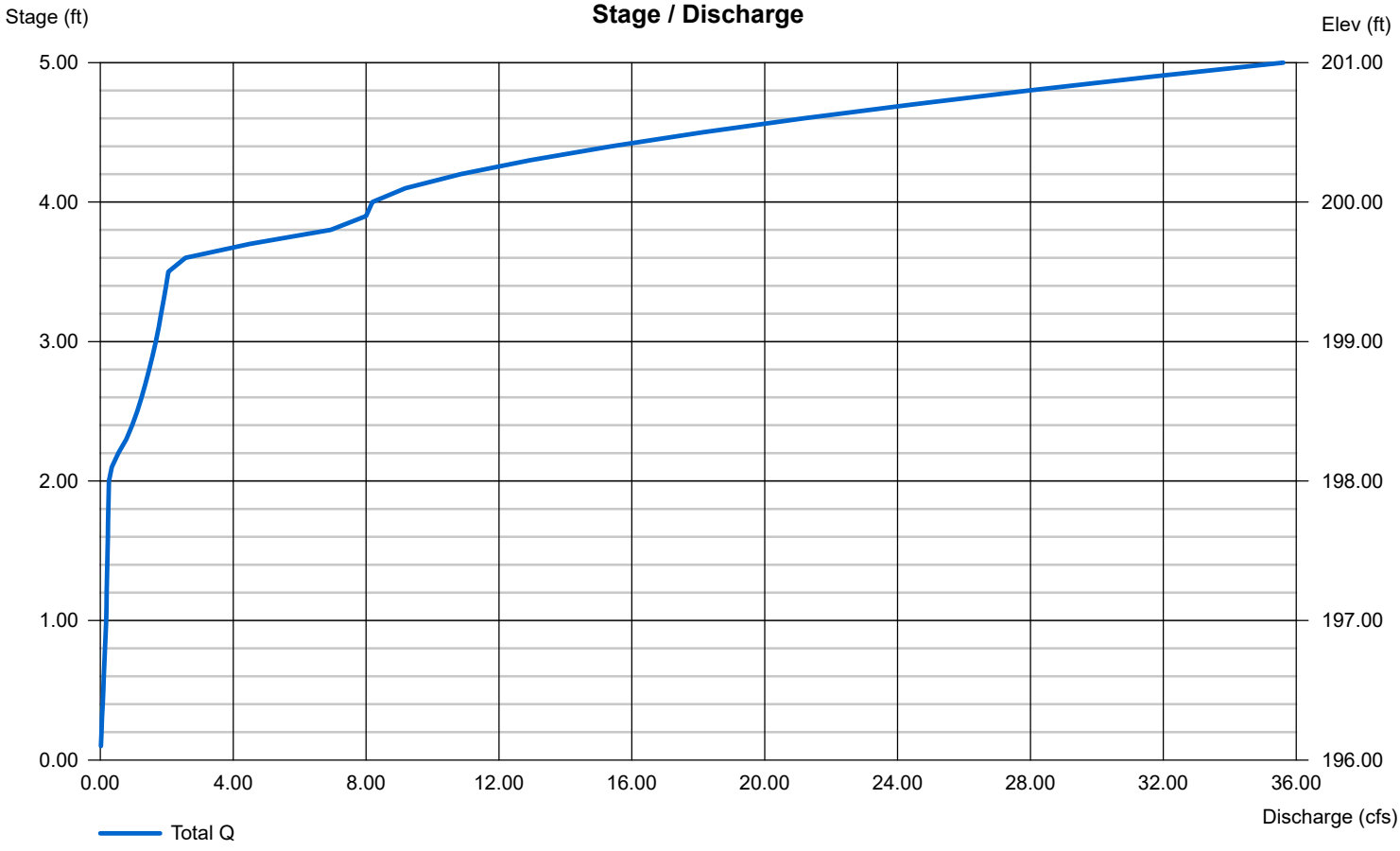
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | 10.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 199.55 | 200.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 2.60 | 3.33 | 3.33 |
| **Weir Type** | = Riser | Broad | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.240 (by Contour)

**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).



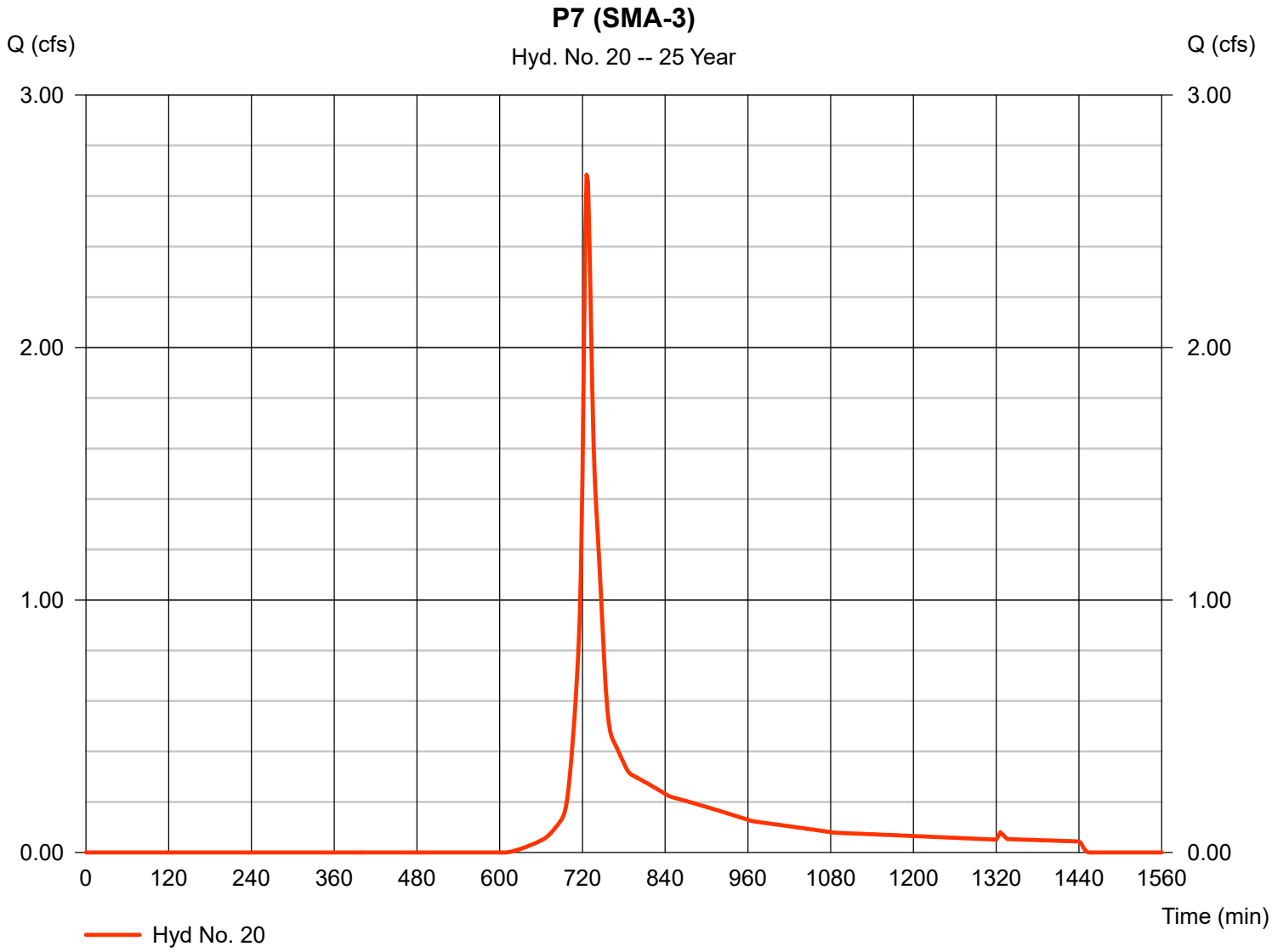
# Hydrograph Report



## Hyd. No. 20

P7 (SMA-3)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 2.685 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 726 min |
| Time interval | = | 2 min | Hyd. volume | = | 9,522 cuft |
| Drainage area | = | 1.350 ac | Curve number | = | 66.1 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 9.20 min |
| Total precip. | = | 5.30 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

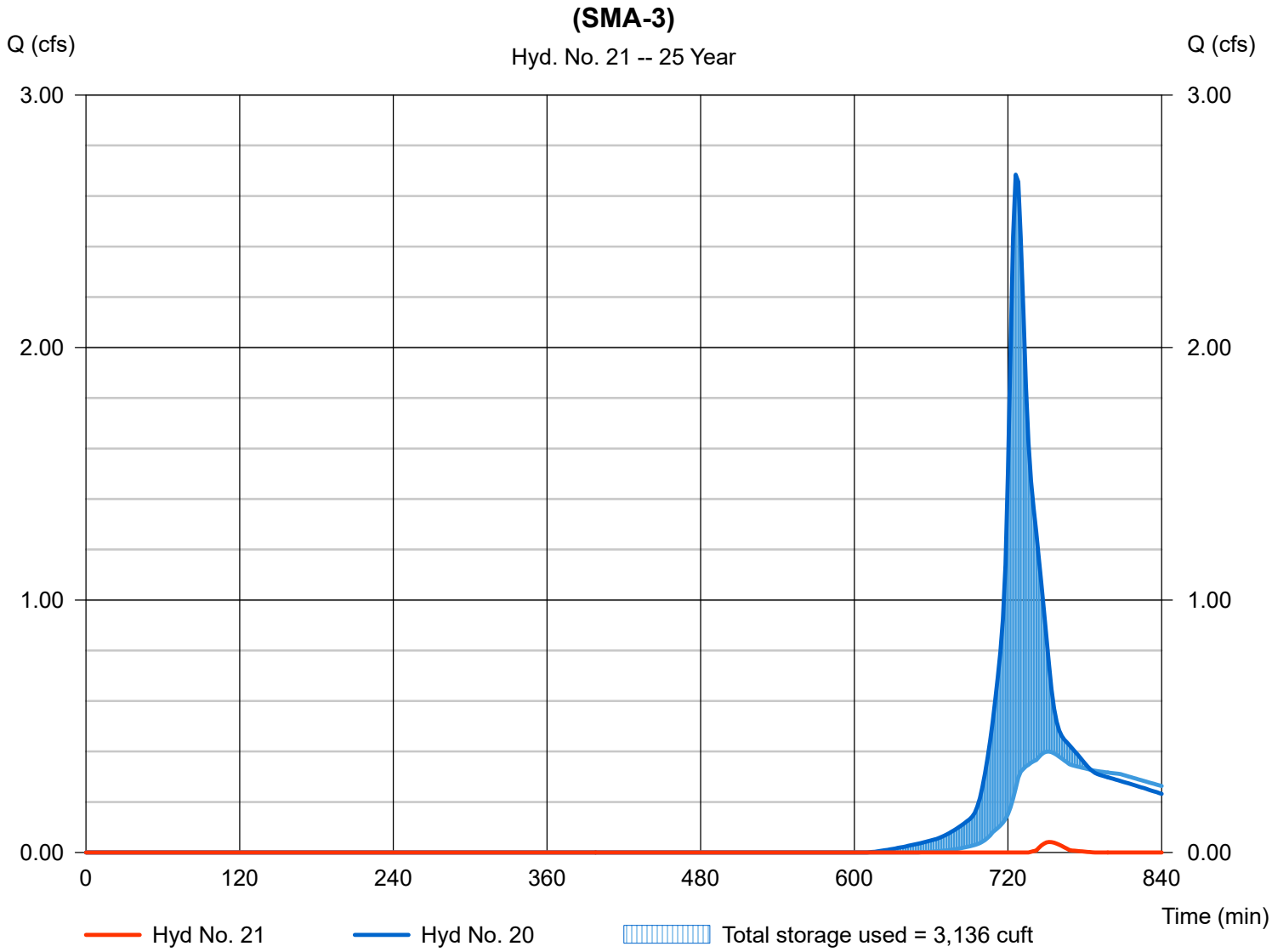


## Hyd. No. 21

(SMA-3)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.042 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 752 min |
| Time interval | = | 2 min | Hyd. volume | = | 52 cuft |
| Inflow hyd. No. | = | 20 - P7 (SMA-3) | Max. Elevation | = | 191.04 ft |
| Reservoir name | = | Inf. Basin (SMA-3) | Max. Storage | = | 3,136 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 2 - Inf. Basin (SMA-3)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 190.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 190.00 | 2,526 | 0 | 0 |
| 1.00 | 191.00 | 3,423 | 2,963 | 2,963 |
| 2.00 | 192.00 | 5,063 | 4,216 | 7,179 |
| 3.00 | 193.00 | 5,904 | 5,478 | 12,656 |
| 4.00 | 194.00 | 6,811 | 6,351 | 19,008 |
| 5.00 | 195.00 | 7,847 | 7,322 | 26,330 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **Span (in)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 2 | 0 | 0 |
| **Invert El. (ft)** | = 188.92 | 190.96 | 0.00 | 0.00 |
| **Length (ft)** | = 45.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 2.00 | 0.00 | 0.00 | n/a |
| **N-Value** | = .012 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | Yes | No | No |

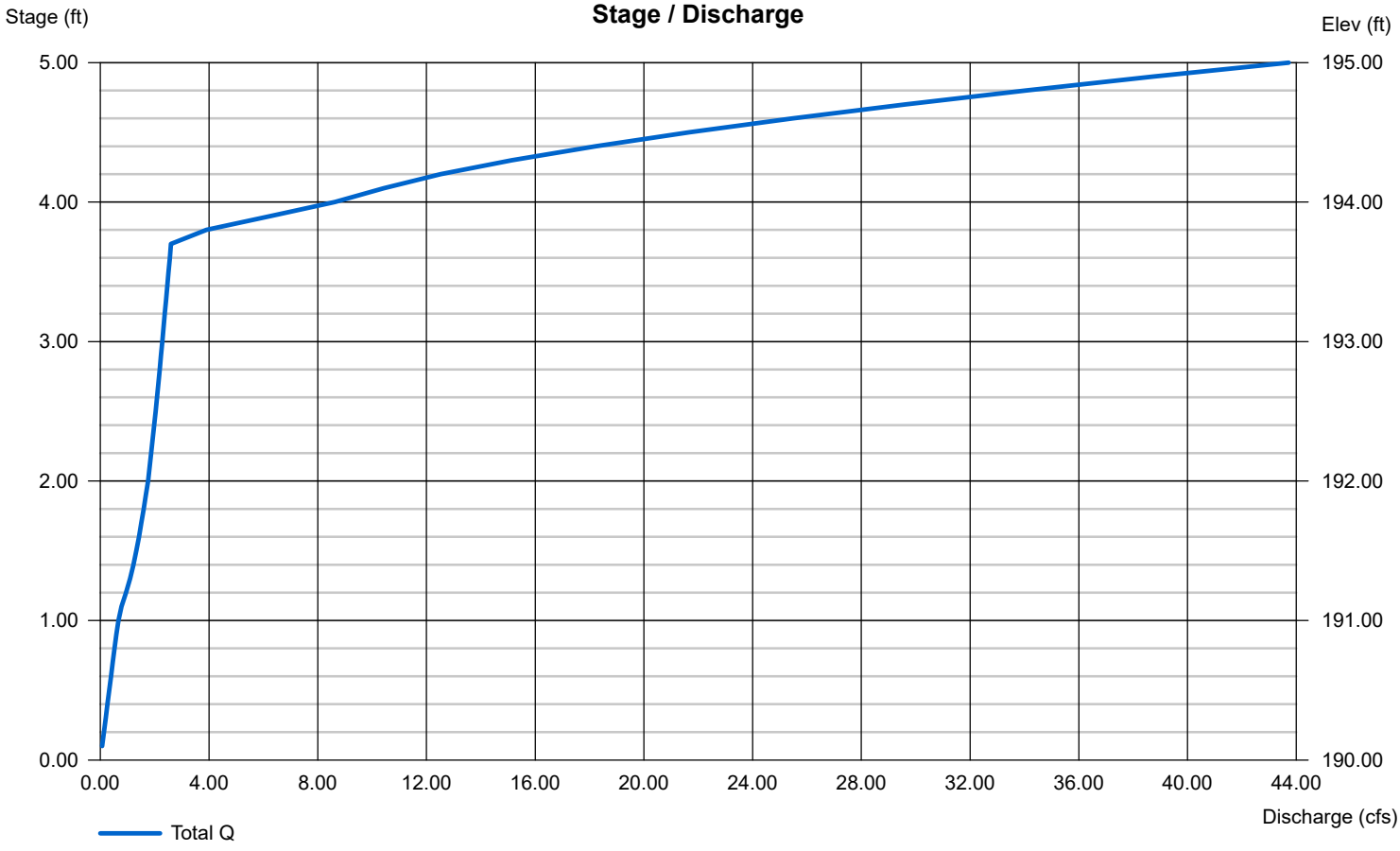
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | 10.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 193.70 | 194.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = Riser | Broad | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



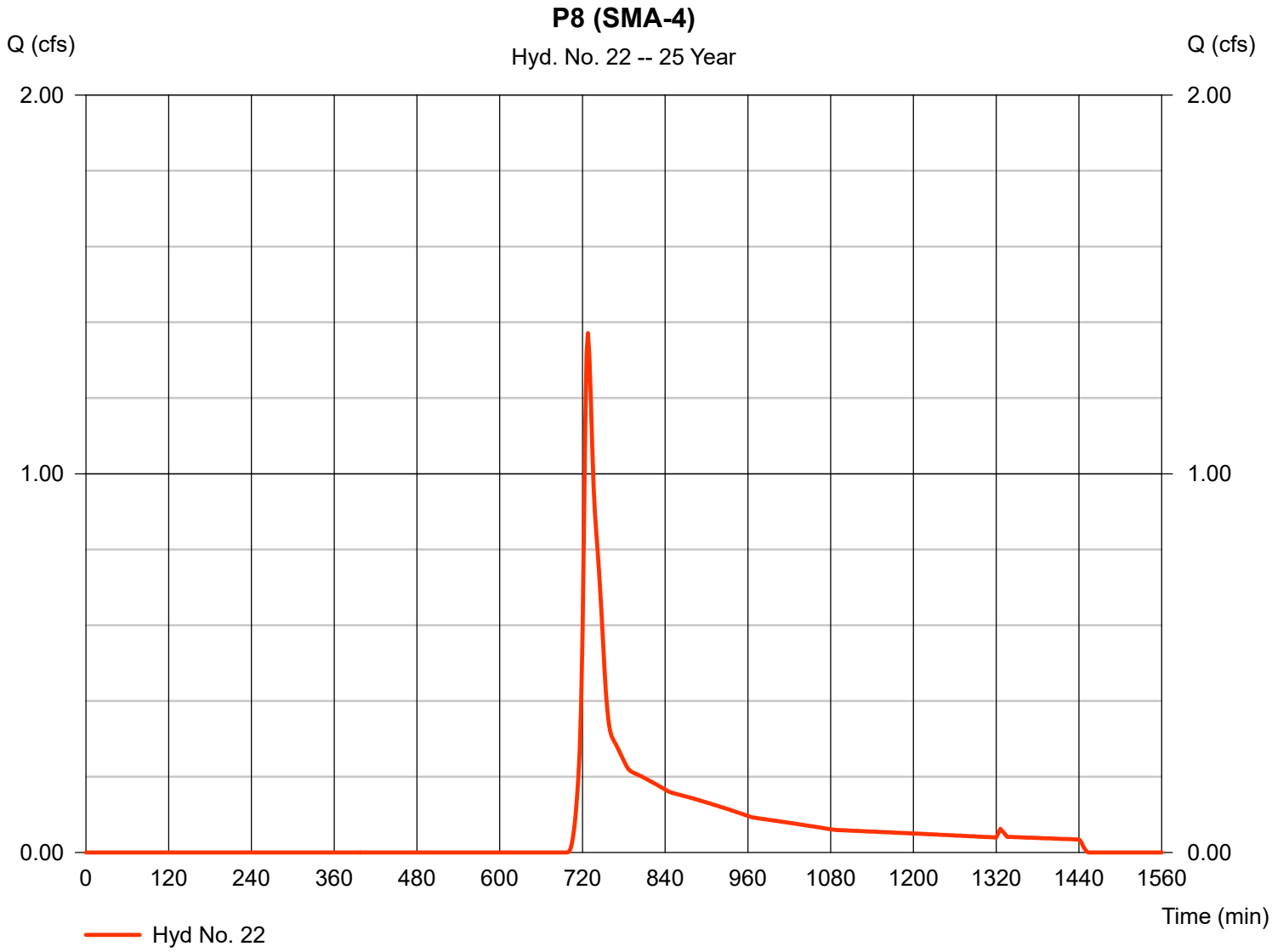
# Hydrograph Report



## Hyd. No. 22

P8 (SMA-4)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 1.371 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 728 min |
| Time interval | = | 2 min | Hyd. volume | = | 5,727 cuft |
| Drainage area | = | 1.460 ac | Curve number | = | 54.2 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 9.10 min |
| Total precip. | = | 5.30 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

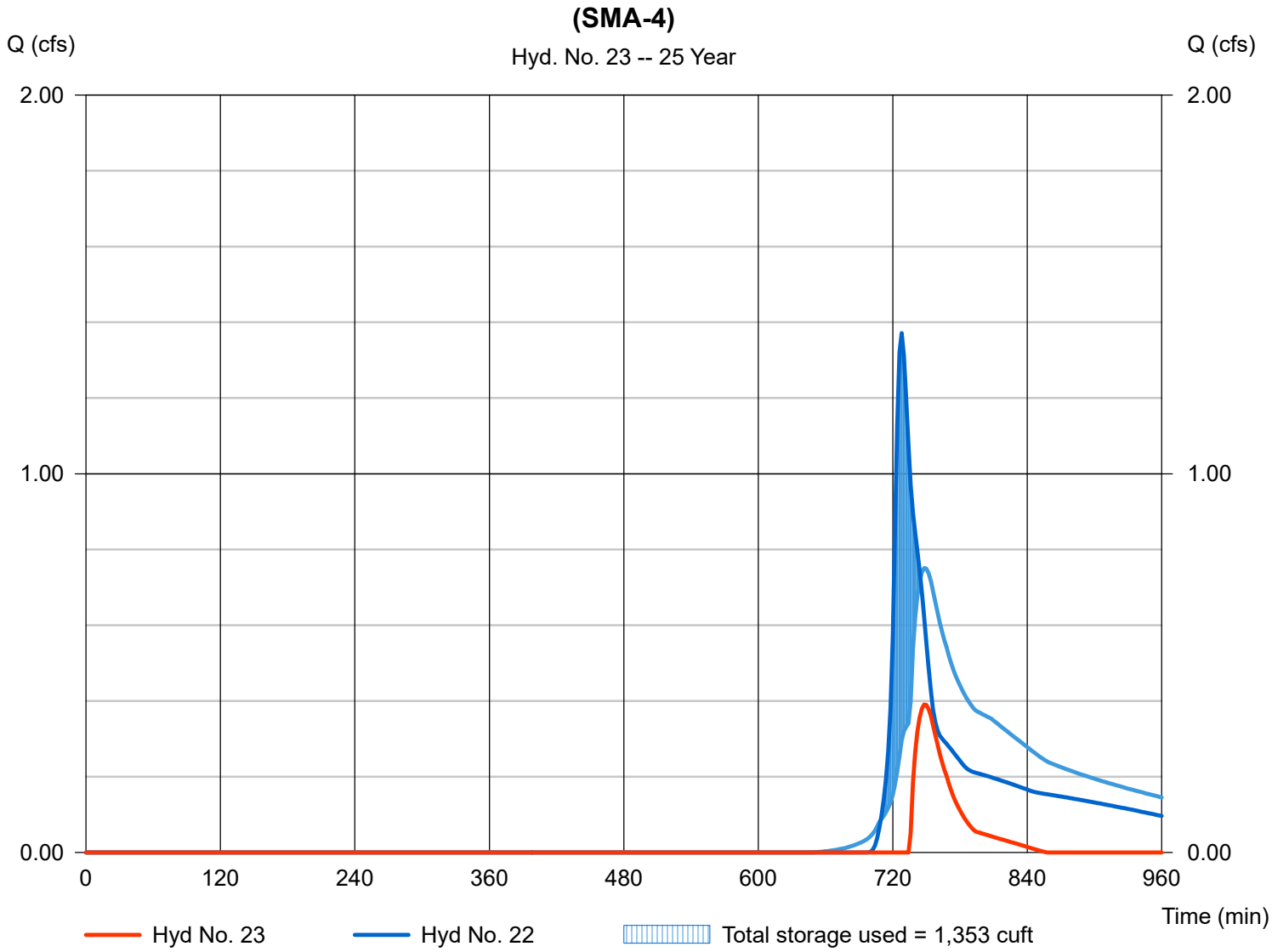


## Hyd. No. 23

(SMA-4)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.391 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 748 min |
| Time interval | = | 2 min | Hyd. volume | = | 859 cuft |
| Inflow hyd. No. | = | 22 - P8 (SMA-4) | Max. Elevation | = | 186.10 ft |
| Reservoir name | = | Inf. Basin (SMA-4) | Max. Storage | = | 1,353 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 4 - Inf. Basin (SMA-4)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 184.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 184.00 | 293 | 0 | 0 |
| 1.00 | 185.00 | 600 | 437 | 437 |
| 2.00 | 186.00 | 963 | 774 | 1,212 |
| 3.00 | 187.00 | 2,002 | 1,451 | 2,663 |
| 4.00 | 188.00 | 2,694 | 2,339 | 5,002 |
| 5.00 | 189.00 | 3,764 | 3,214 | 8,216 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 5.00 | 0.00 | 0.00 |
| **Span (in)** | = 12.00 | 5.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 2 | 0 | 0 |
| **Invert El. (ft)** | = 183.52 | 185.80 | 0.00 | 0.00 |
| **Length (ft)** | = 57.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 1.00 | 0.00 | 0.00 | n/a |
| **N-Value** | = .012 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | Yes | No | No |

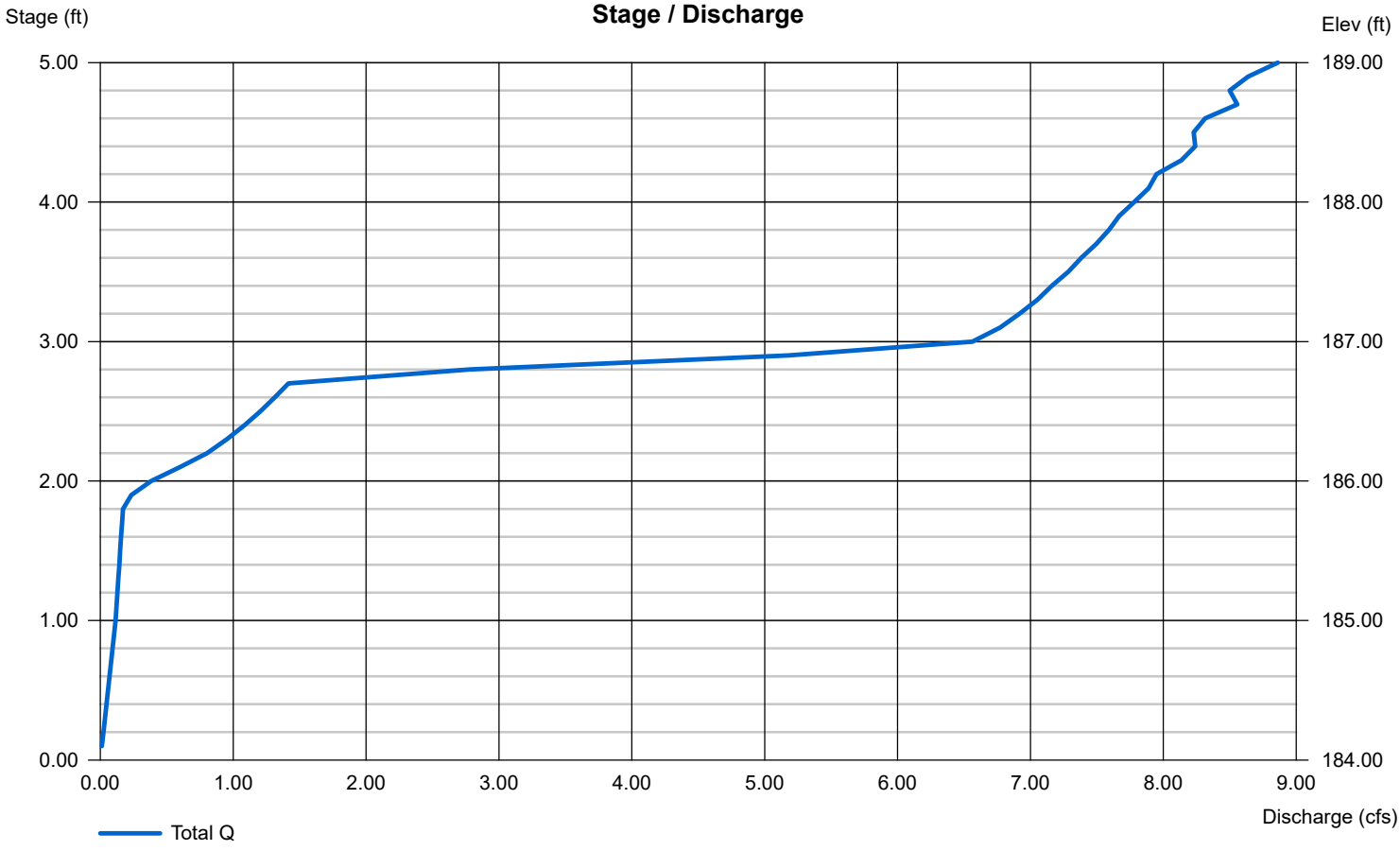
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | 0.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 186.70 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = Riser | --- | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



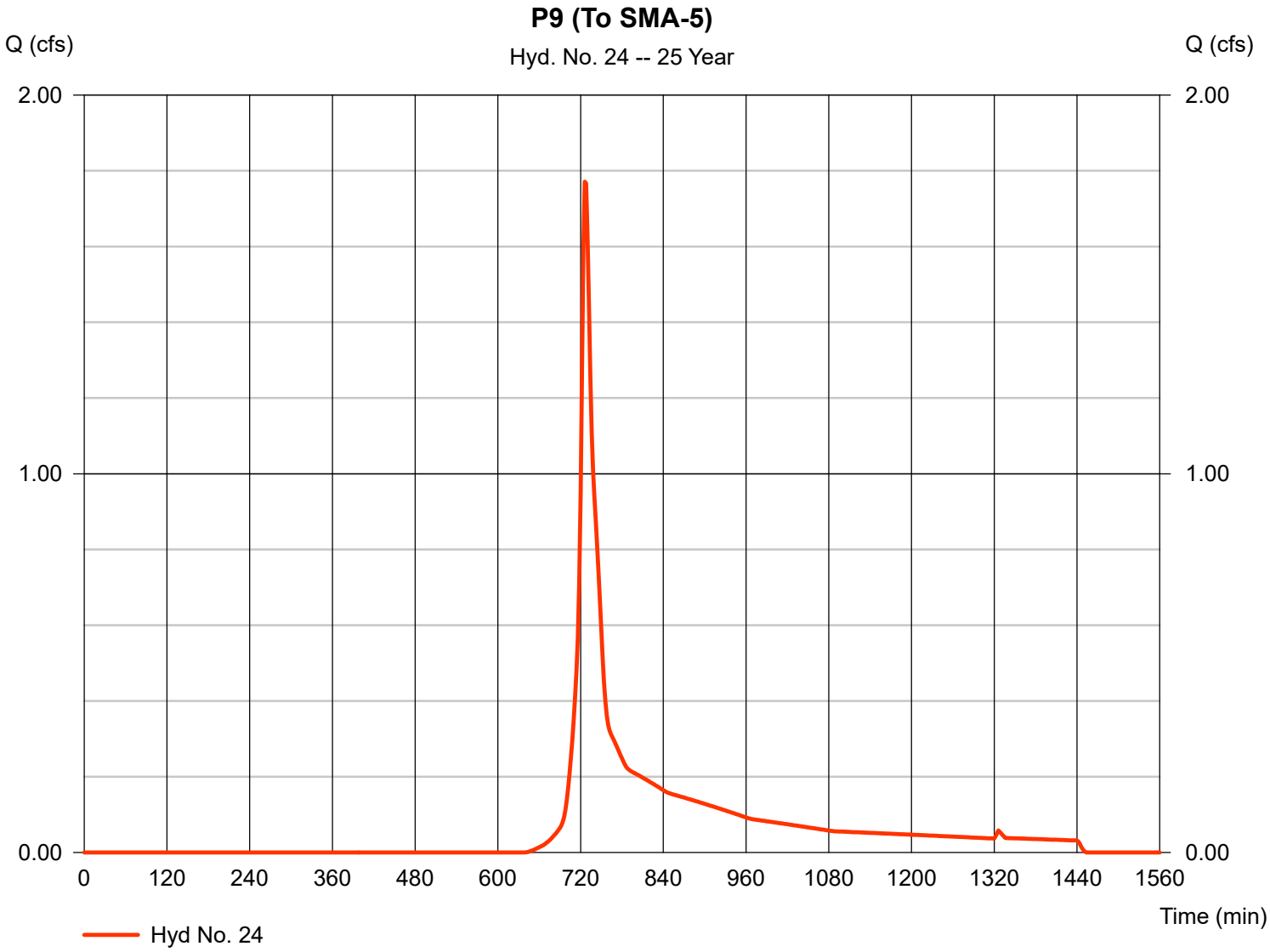
# Hydrograph Report



## Hyd. No. 24

P9 (To SMA-5)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 1.771 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 726 min |
| Time interval | = | 2 min | Hyd. volume | = | 6,459 cuft |
| Drainage area | = | 1.050 ac | Curve number | = | 62.9 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 7.30 min |
| Total precip. | = | 5.30 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

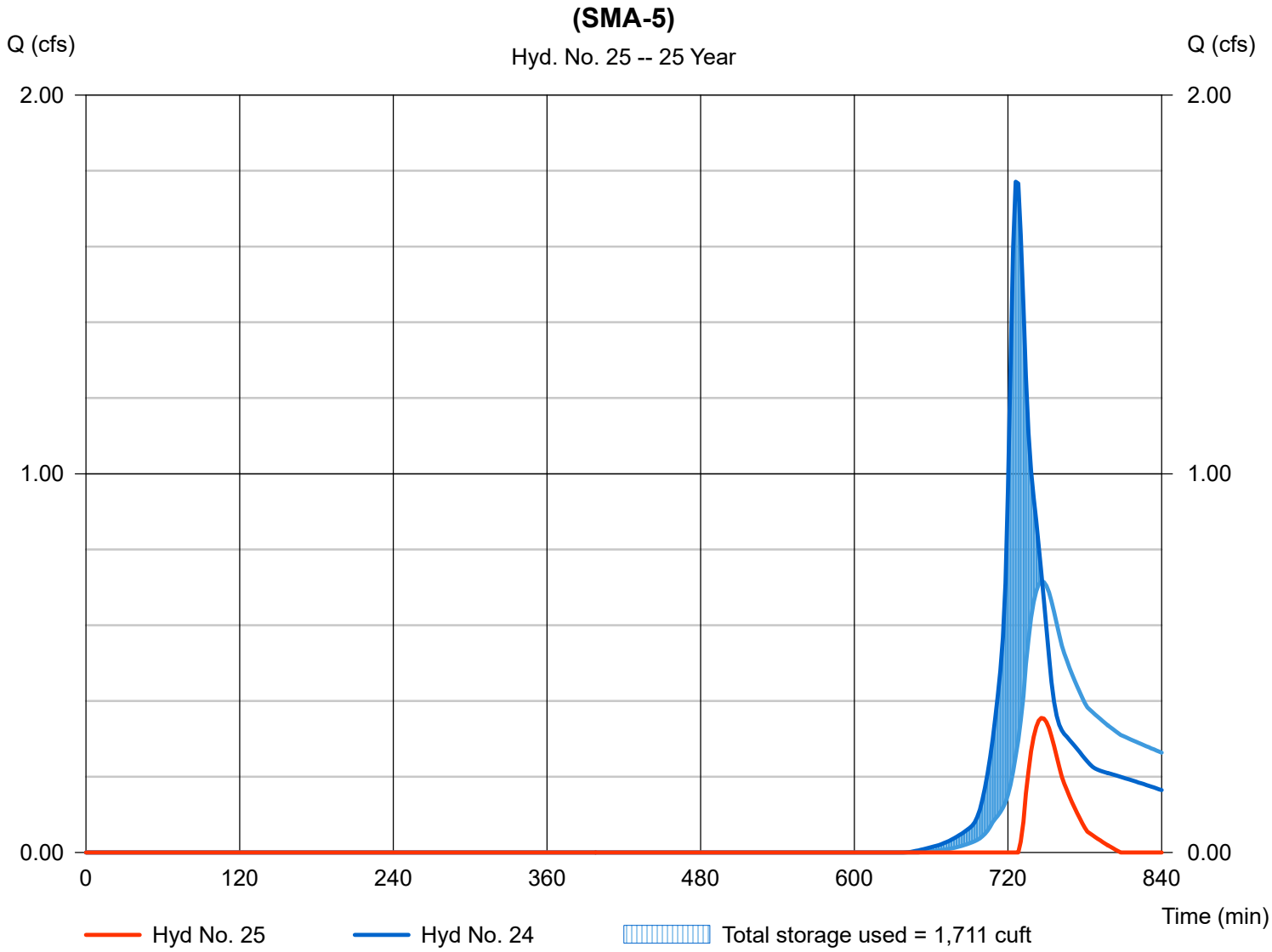


## Hyd. No. 25

(SMA-5)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.355 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 746 min |
| Time interval | = | 2 min | Hyd. volume | = | 700 cuft |
| Inflow hyd. No. | = | 24 - P9 (To SMA-5) | Max. Elevation | = | 185.28 ft |
| Reservoir name | = | Inf. Basin (SMA-5) | Max. Storage | = | 1,711 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



## Pond No. 7 - Inf. Basin (SMA-5)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 183.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 183.00 | 06 | 0 | 0 |
| 1.00 | 184.00 | 438 | 165 | 165 |
| 2.00 | 185.00 | 1,622 | 968 | 1,133 |
| 3.00 | 186.00 | 2,559 | 2,073 | 3,205 |
| 3.80 | 186.80 | 3,620 | 2,459 | 5,664 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 5.00 | 0.00 | 0.00 |
| **Span (in)** | = 12.00 | 5.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 2 | 0 | 0 |
| **Invert El. (ft)** | = 182.20 | 185.00 | 0.00 | 0.00 |
| **Length (ft)** | = 60.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 1.00 | 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 | No | No |

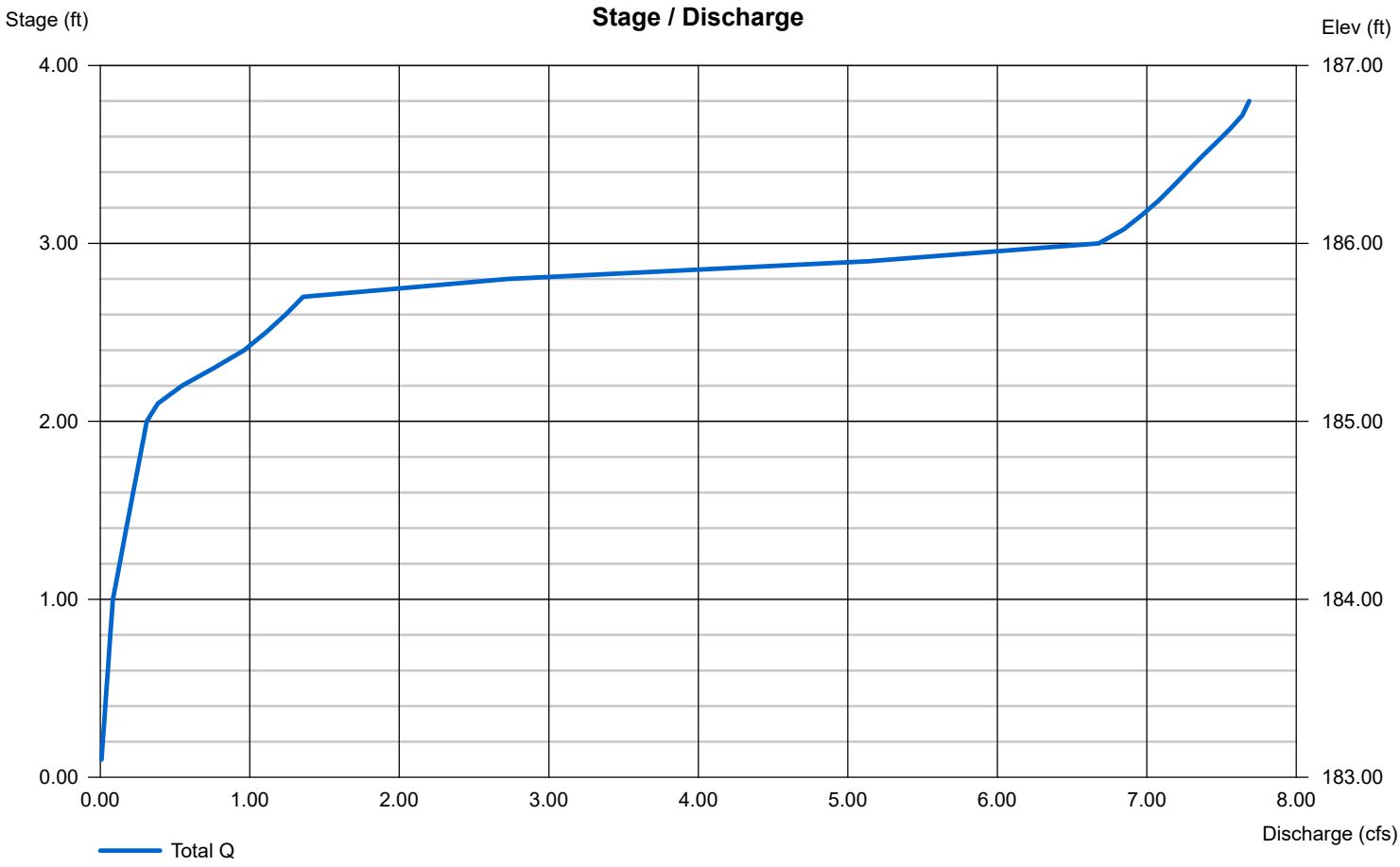
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | Inactive | 0.00 | 0.00 |
| **Crest El. (ft)** | = 185.70 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = Riser | Broad | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



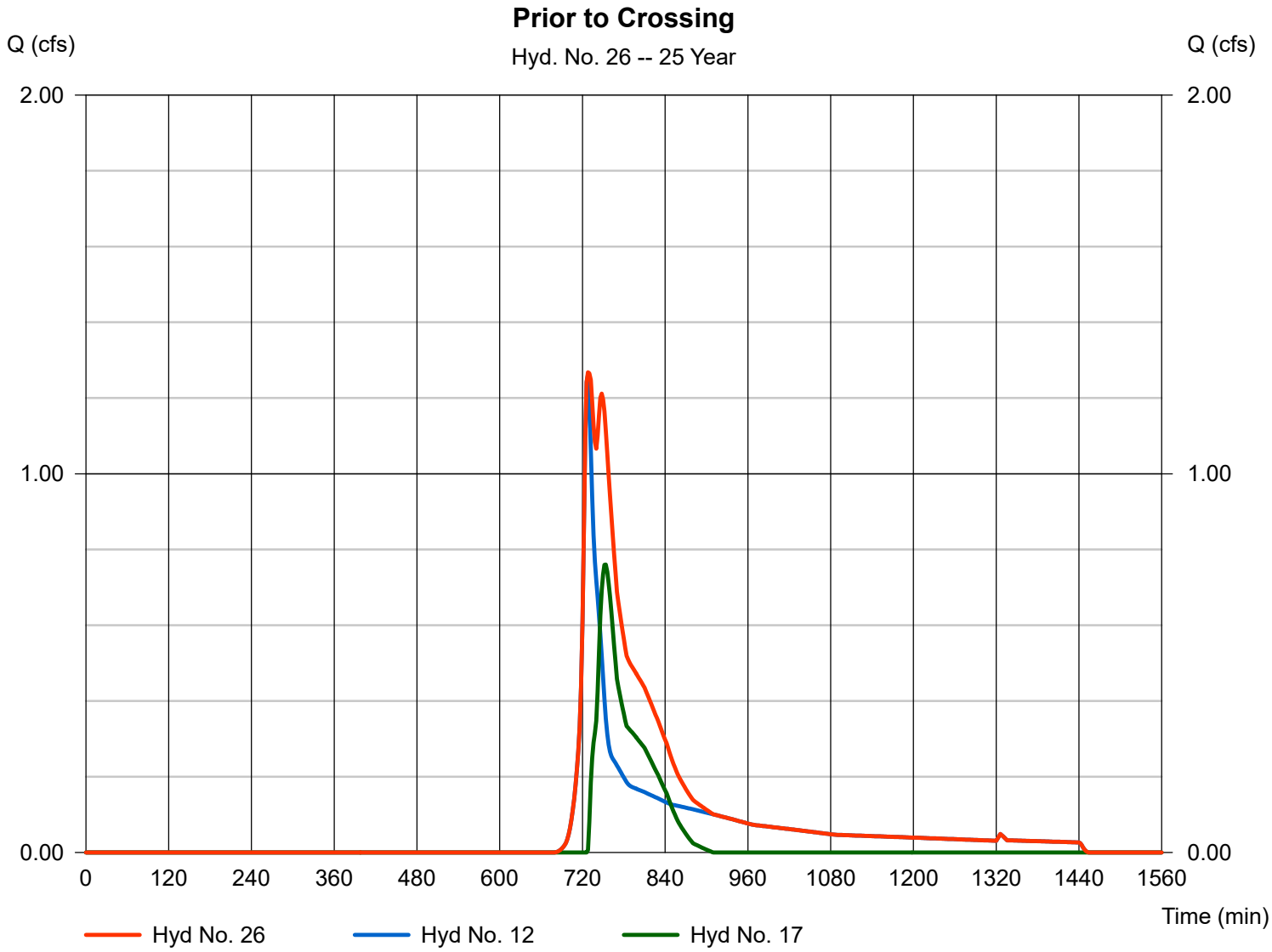
# Hydrograph Report



## Hyd. No. 26

Prior to Crossing

| | | | |
|---|---|---|---|
| Hydrograph type | = Combine | Peak discharge | = 1.268 cfs |
| Storm frequency | = 25 yrs | Time to peak | = 728 min |
| Time interval | = 2 min | Hyd. volume | = 7,582 cuft |
| Inflow hyds. | = 12, 17 | Contrib. drain. area | = 1.010 ac |



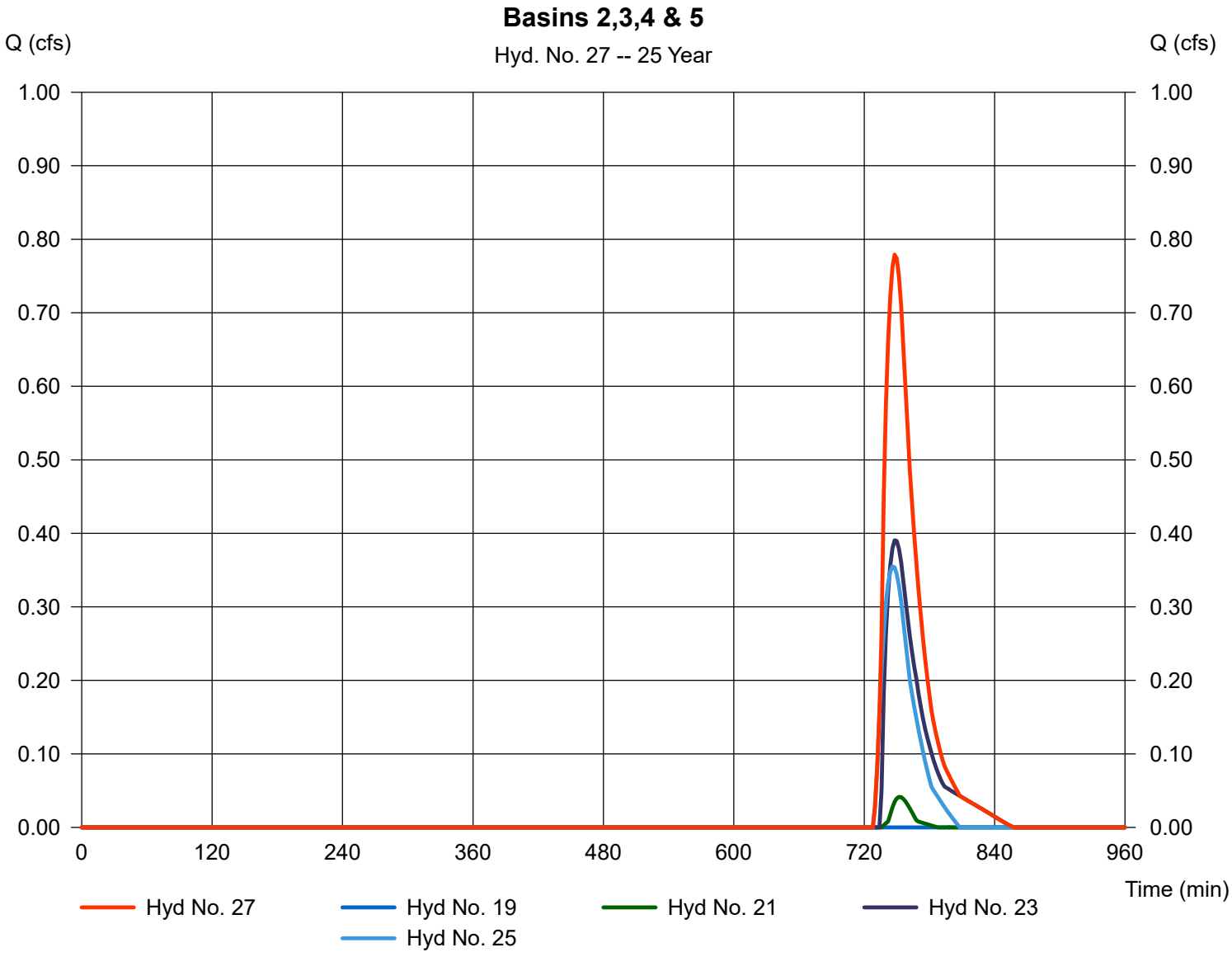
# Hydrograph Report



## Hyd. No. 27

Basins 2,3,4 & 5

| | | | |
|---|---|---|---|
| Hydrograph type | = Combine | Peak discharge | = 0.779 cfs |
| Storm frequency | = 25 yrs | Time to peak | = 748 min |
| Time interval | = 2 min | Hyd. volume | = 1,611 cuft |
| Inflow hyds. | = 19, 21, 23, 25 | Contrib. drain. area | = 0.000 ac |



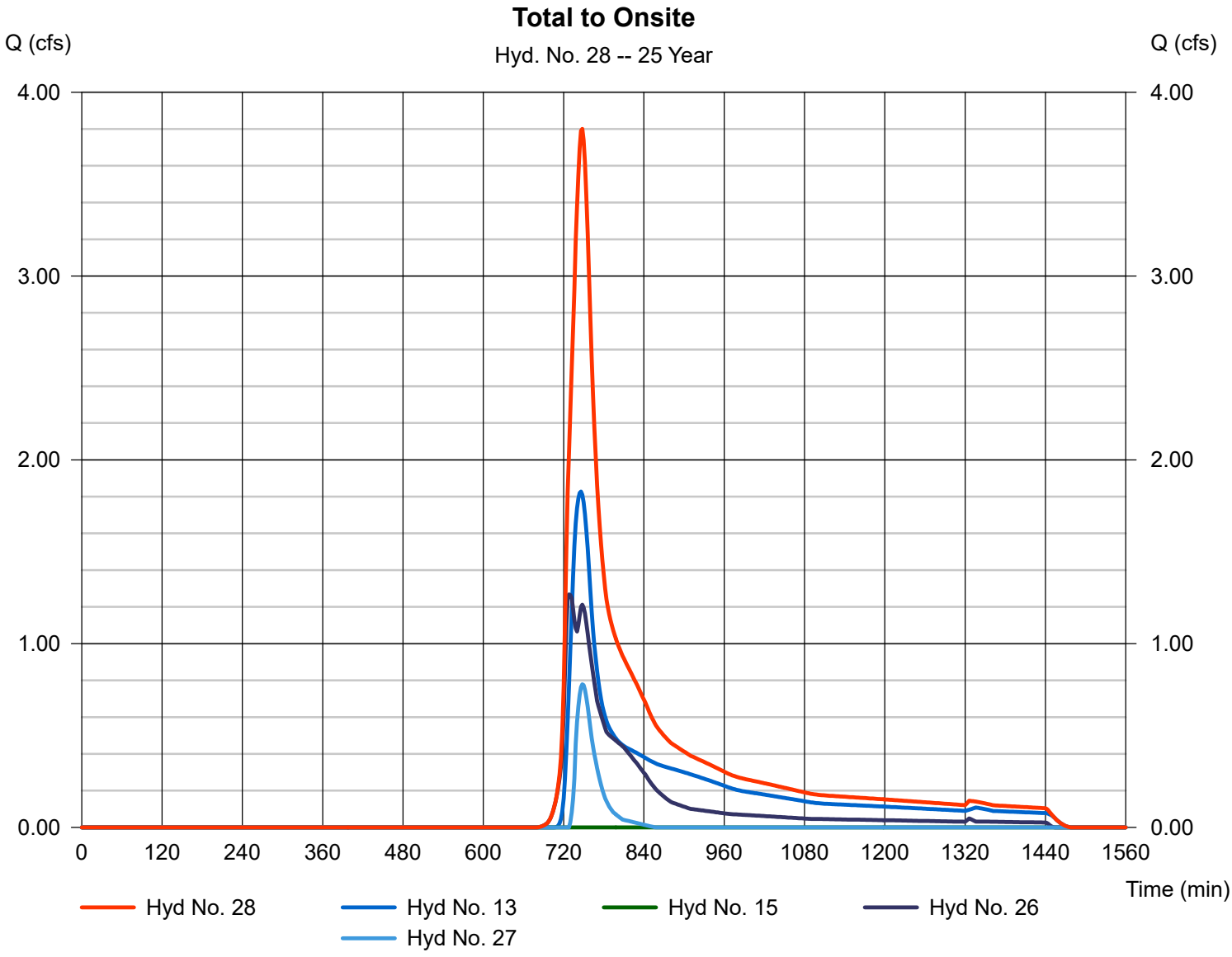
# Hydrograph Report



## Hyd. No. 28

Total to Onsite

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Combine | Peak discharge | = | 3.801 cfs |
| Storm frequency | = | 25 yrs | Time to peak | = | 748 min |
| Time interval | = | 2 min | Hyd. volume | = | 20,926 cuft |
| Inflow hyds. | = | 13, 15, 26, 27 | Contrib. drain. area | = | 3.660 ac |



# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.2

| 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 | 0.013 | 2 | 910 | 370 | ---- | ------ | ------ | E1 |
| 2 | SCS Runoff | 5.807 | 2 | 732 | 25,020 | ---- | ------ | ------ | E2 |
| 3 | SCS Runoff | 3.491 | 2 | 748 | 25,545 | ---- | ------ | ------ | E3 |
| 4 | Combine | 7.993 | 2 | 736 | 50,934 | 1, 2, 3 | ------ | ------ | Total Onsite |
| 6 | SCS Runoff | 64.90 | 2 | 736 | 308,332 | ---- | ------ | ------ | Offsite to Exist 15-inch Culvert |
| 7 | SCS Runoff | 28.58 | 2 | 730 | 116,952 | ---- | ------ | ------ | Town Drain Outlet to PL |
| 8 | Combine | 97.30 | 2 | 734 | 450,303 | 2, 6, 7 | ------ | ------ | Total to 15 inch culvert |
| 10 | SCS Runoff | 0.201 | 2 | 750 | 1,945 | ---- | ------ | ------ | P1 |
| 11 | Reservoir | 0.000 | 2 | 842 | 0 | 10 | 195.59 | 313 | WQ Swale(SMA-6) |
| 12 | SCS Runoff | 2.002 | 2 | 726 | 7,341 | ---- | ------ | ------ | P2 |
| 13 | SCS Runoff | 3.308 | 2 | 742 | 18,935 | ---- | ------ | ------ | P3 |
| 14 | SCS Runoff | 0.417 | 2 | 724 | 1,447 | ---- | ------ | ------ | P4 |
| 15 | Reservoir | 0.000 | 2 | 666 | 0 | 14 | 2.31 | 339 | Roof Drywell Lot 7 |
| 16 | SCS Runoff | 4.432 | 2 | 732 | 18,266 | ---- | ------ | ------ | P5 (To SMA-1) |
| 17 | Reservoir | 1.951 | 2 | 746 | 5,724 | 16 | 203.73 | 5,122 | SMA-1 |
| 18 | SCS Runoff | 1.880 | 2 | 732 | 8,313 | ---- | ------ | ------ | P6 (To SMA-2) |
| 19 | Reservoir | 0.046 | 2 | 768 | 97 | 18 | 198.08 | 2,786 | SMA-2 |
| 20 | SCS Runoff | 3.887 | 2 | 726 | 13,476 | ---- | ------ | ------ | P7 (SMA-3) |
| 21 | Reservoir | 0.260 | 2 | 752 | 570 | 20 | 191.23 | 4,524 | (SMA-3) |
| 22 | SCS Runoff | 2.342 | 2 | 728 | 8,934 | ---- | ------ | ------ | P8 (SMA-4) |
| 23 | Reservoir | 0.678 | 2 | 748 | 1,737 | 22 | 186.28 | 2,289 | (SMA-4) |
| 24 | SCS Runoff | 2.653 | 2 | 726 | 9,342 | ---- | ------ | ------ | P9 (To SMA-5) |
| 25 | Reservoir | 0.701 | 2 | 744 | 1,754 | 24 | 185.49 | 2,595 | (SMA-5) |
| 26 | Combine | 2.876 | 2 | 742 | 13,064 | 12, 17, | ------ | ------ | Prior to Crossing |
| 27 | Combine | 1.625 | 2 | 748 | 4,160 | 19, 21, 23, 25, | ------ | ------ | Basins 2,3,4 & 5 |
| 28 | Combine | 7.751 | 2 | 744 | 36,160 | 13, 15, 26, 27 | ------ | ------ | Total to Onsite |
| 30 | Combine | 93.04 | 2 | 734 | 432,625 | 6, 7, 12, | ------ | ------ | Post to Open Box Culvert |

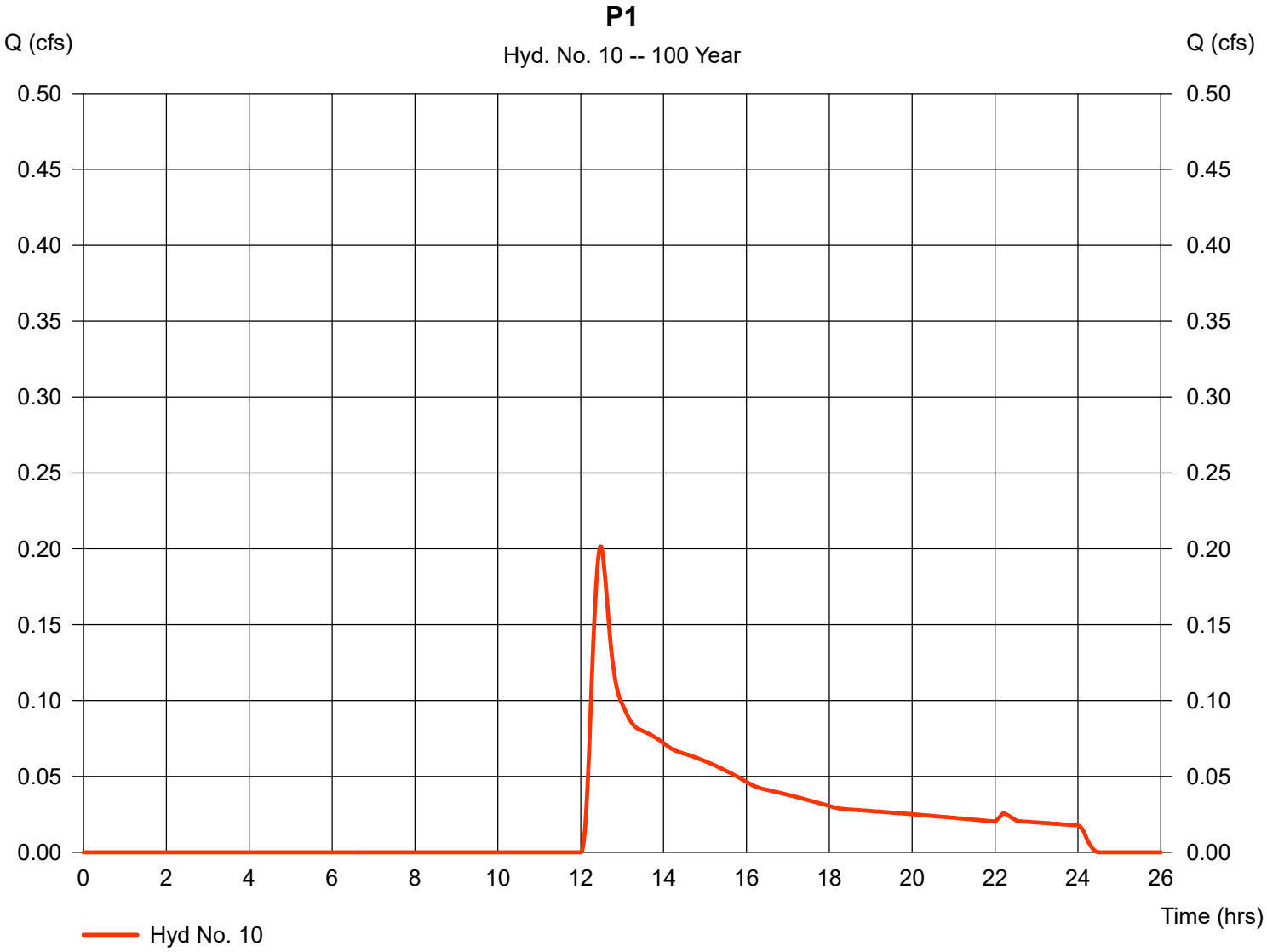
# Hydrograph Report



## Hyd. No. 10

P1

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.201 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.50 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 1,945 cuft |
| Drainage area | = | 1.060 ac | Curve number | = | 38 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 18.80 min |
| Total precip. | = | 6.40 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

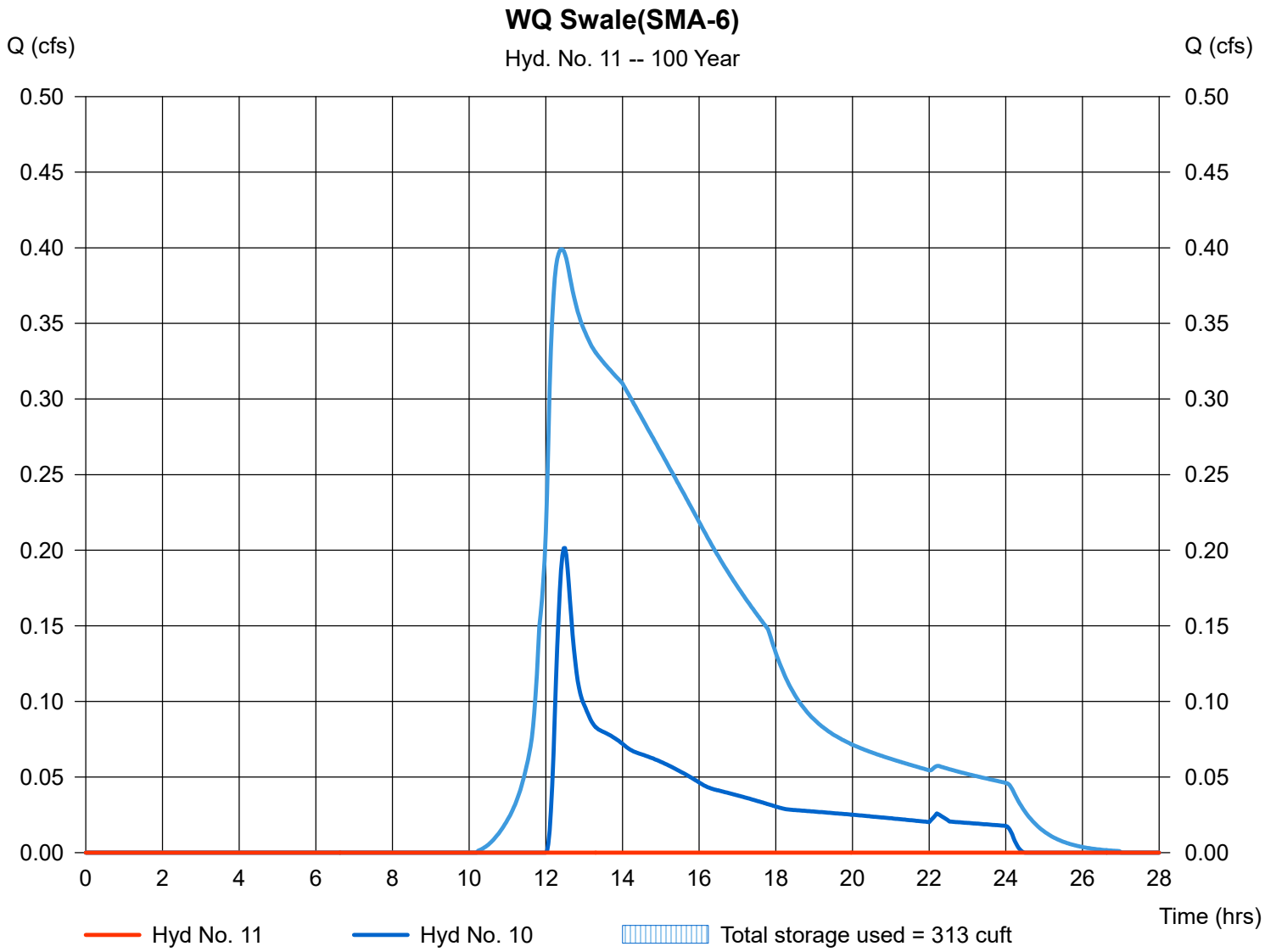


## Hyd. No. 11

WQ Swale(SMA-6)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 14.03 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Inflow hyd. No. | = | 10 - P1 | Max. Elevation | = | 195.59 ft |
| Reservoir name | = | WQS (SMA-6) | Max. Storage | = | 313 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 6 - WQS (SMA-6)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 195.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 195.00 | 378 | 0 | 0 |
| 1.00 | 196.00 | 692 | 527 | 527 |
| 2.00 | 197.00 | 1,109 | 892 | 1,419 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Span (in)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **No. Barrels** | = 0 | 0 | 0 | 0 |
| **Invert El. (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Length (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 0.00 | 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 | No | No | No |

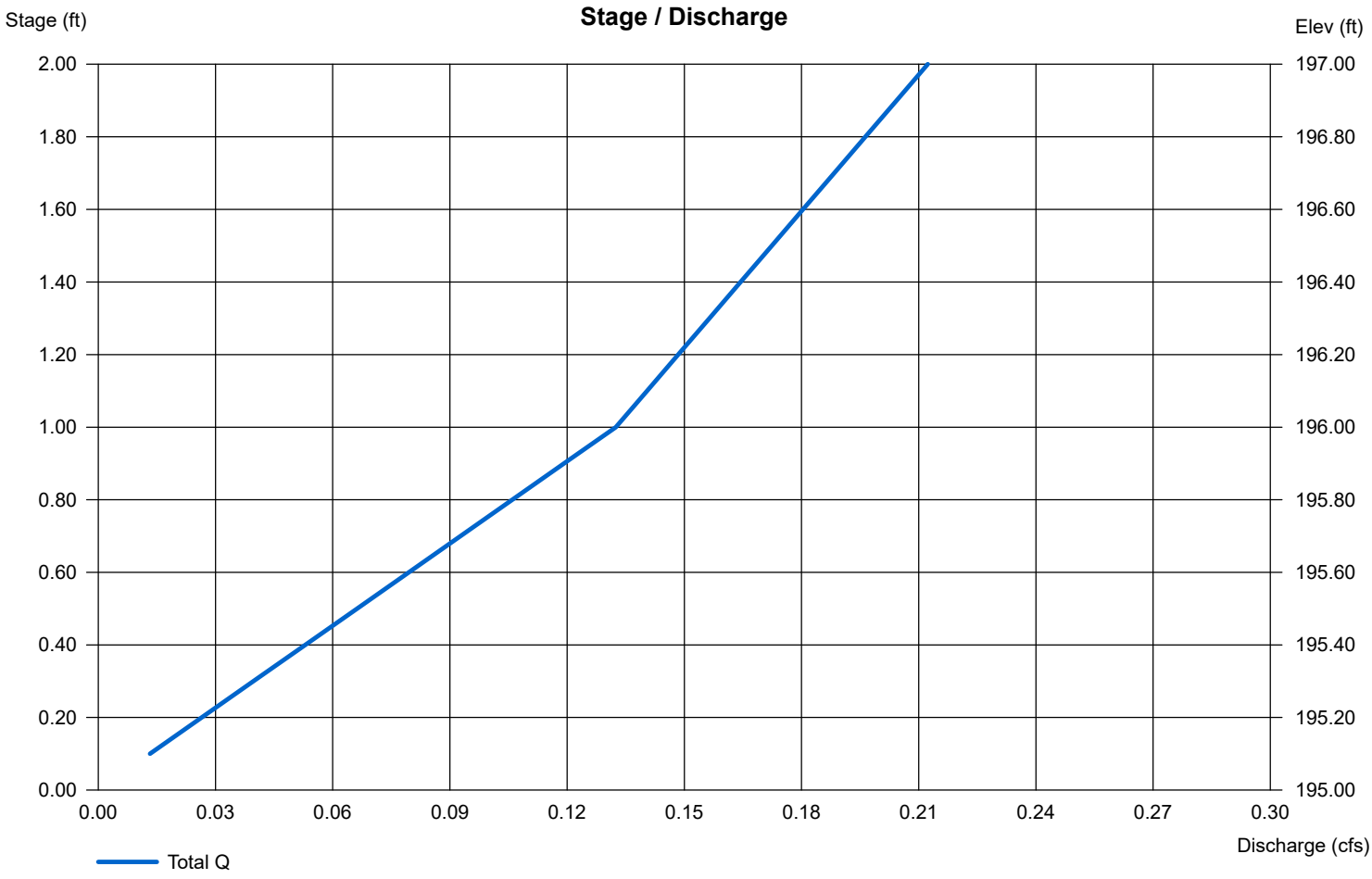
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 4.00 | 0.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 197.00 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 2.60 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = Broad | --- | --- | --- |
| **Multi-Stage** | = No | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



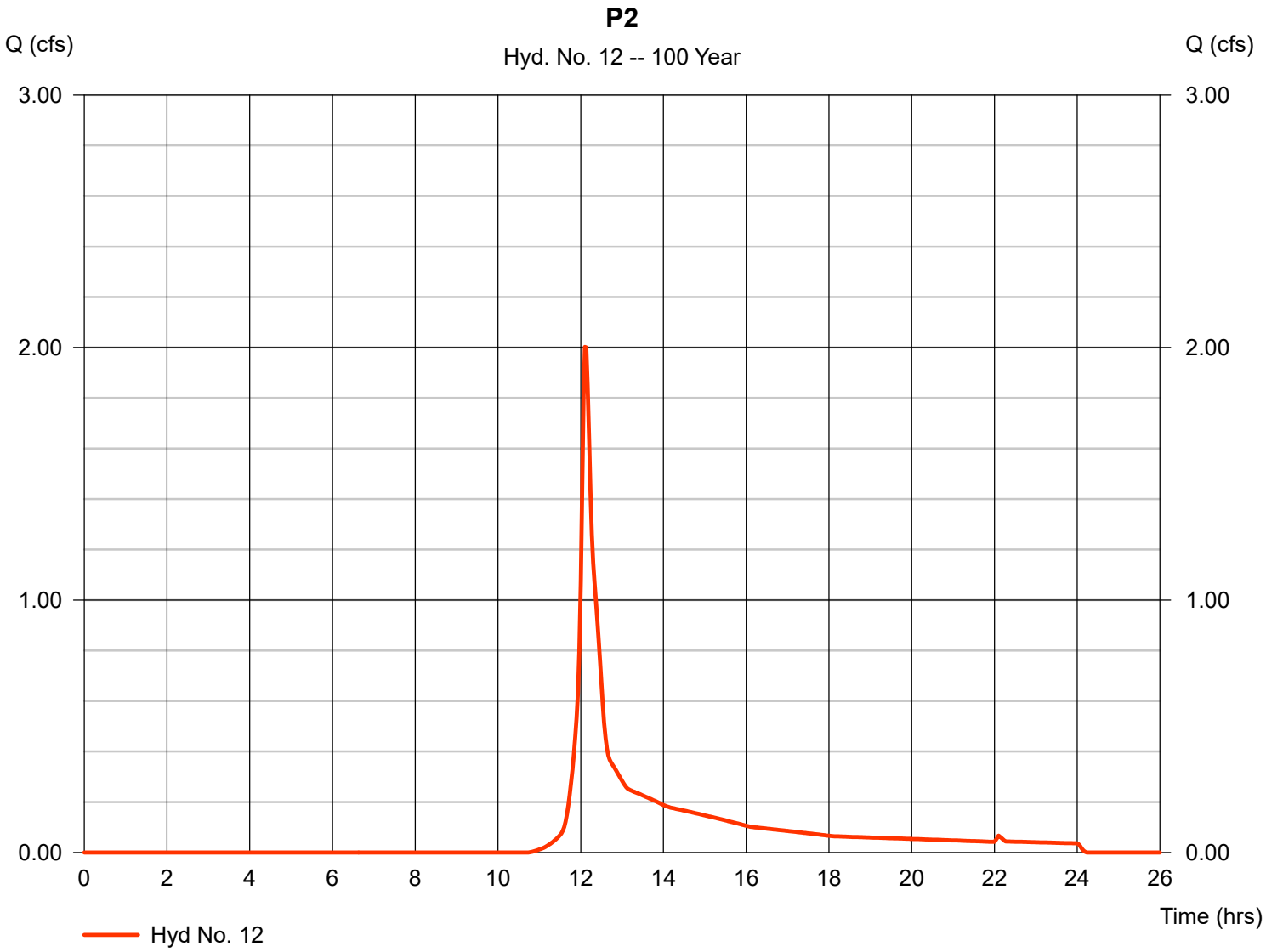
# Hydrograph Report



## Hyd. No. 12

P2

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 2.002 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.10 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 7,341 cuft |
| Drainage area | = | 1.010 ac | Curve number | = | 57.9 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 9.60 min |
| Total precip. | = | 6.40 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



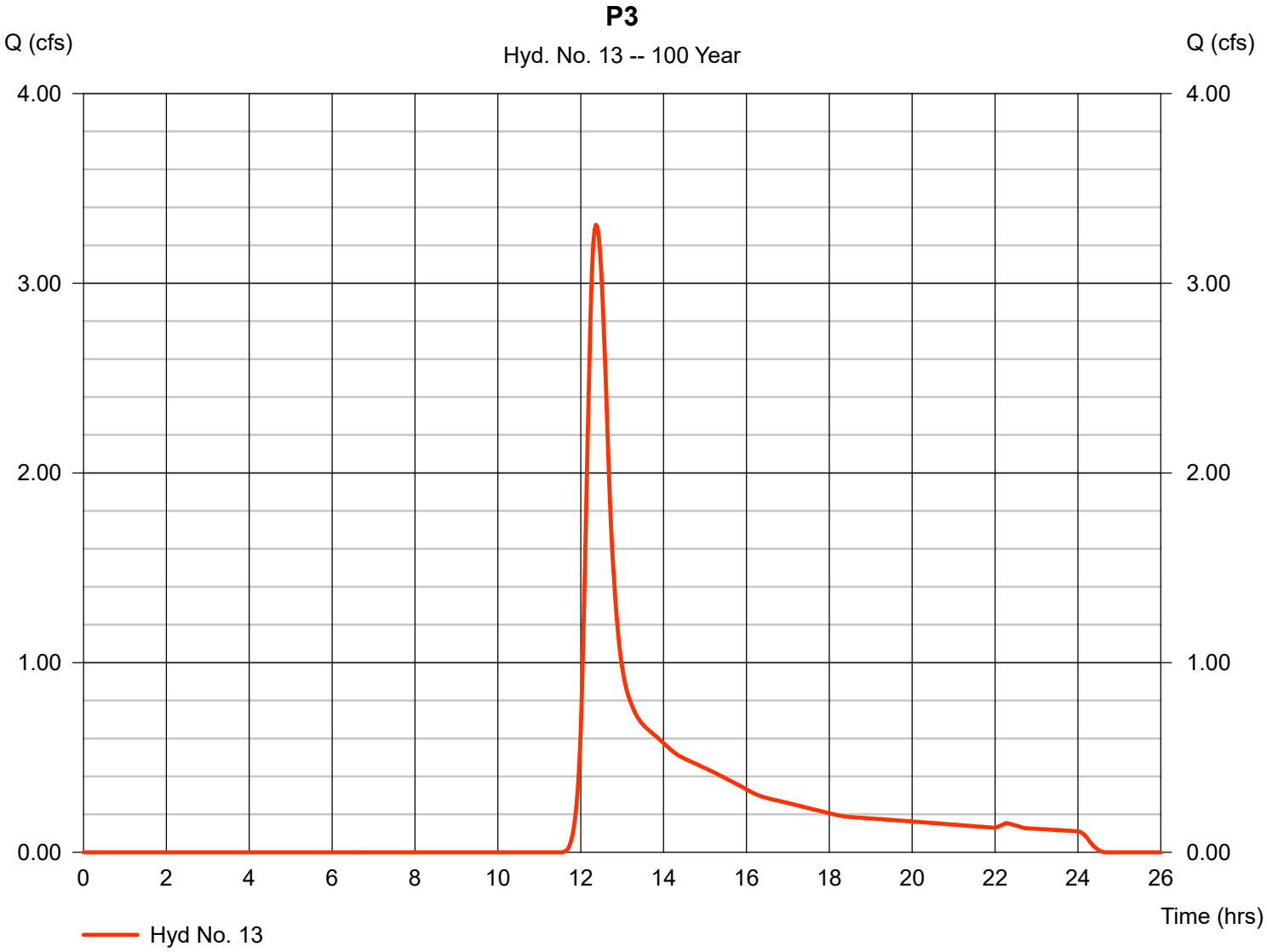
# Hydrograph Report



## Hyd. No. 13

P3

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 3.308 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.37 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 18,935 cuft |
| Drainage area | = | 3.660 ac | Curve number | = | 51.3 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 24.70 min |
| Total precip. | = | 6.40 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



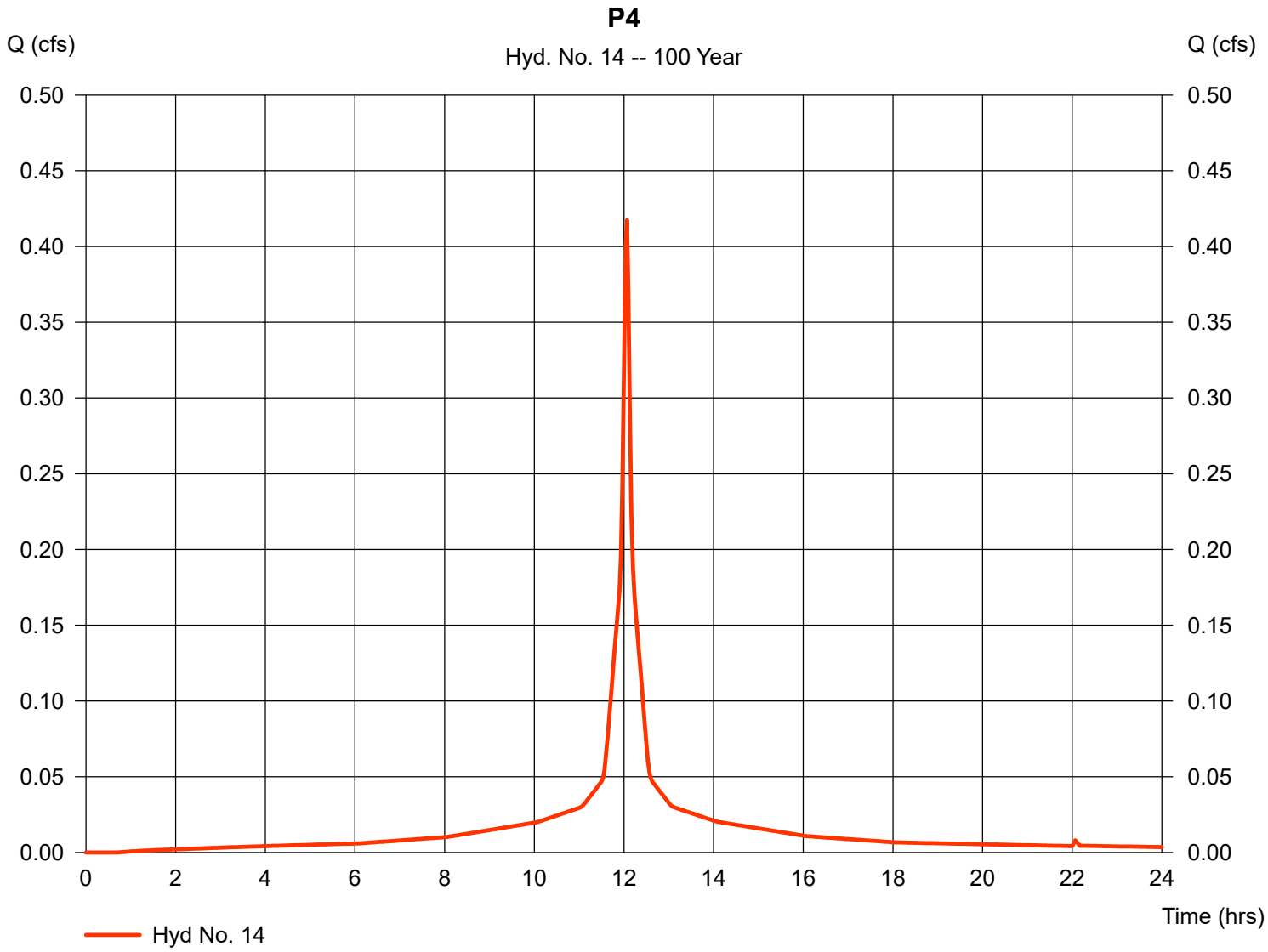
# Hydrograph Report



## Hyd. No. 14

P4

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 0.417 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.07 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 1,447 cuft |
| Drainage area | = | 0.069 ac | Curve number | = | 98 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 6.00 min |
| Total precip. | = | 6.40 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

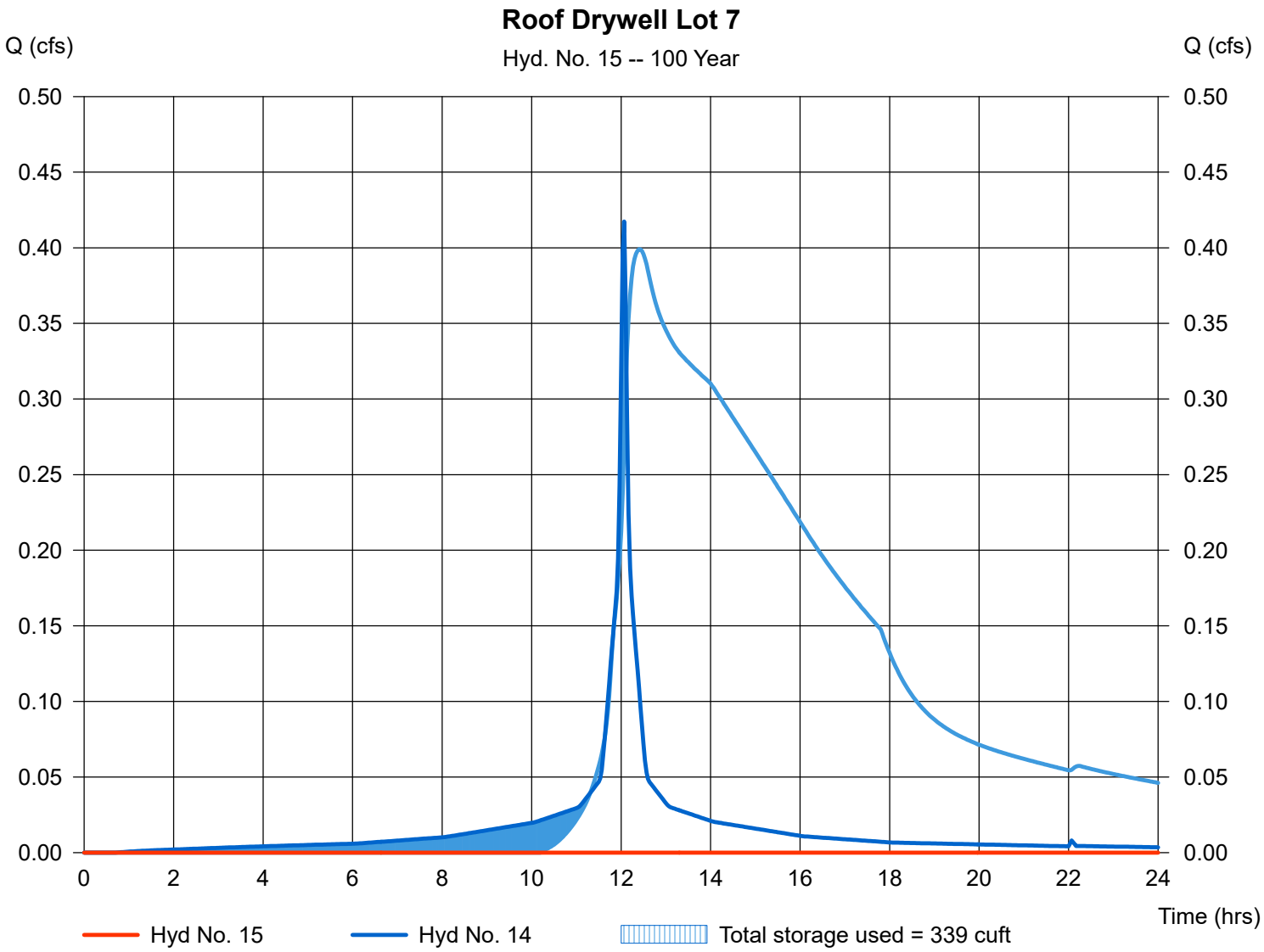


## Hyd. No. 15

Roof Drywell Lot 7

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.000 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 11.10 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 0 cuft |
| Inflow hyd. No. | = | 14 - P4 | Max. Elevation | = | 2.31 ft |
| Reservoir name | = | SC-310 Drywell | Max. Storage | = | 339 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



## Pond No. 9 - SC-310 Drywell

### Pond Data

**UG Chambers -** Invert elev. = 0.50 ft, Rise x Span = 1.33 x 2.83 ft, Barrel Len = 21.35 ft, No. Barrels = 3, Slope = 0.00%, Headers = No
**Encasement -** Invert elev. = 0.01 ft, Width = 3.83 ft, Height = 2.50 ft, Voids = 40.00%

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 0.01 | n/a | 0 | 0 |
| 0.25 | 0.26 | n/a | 25 | 25 |
| 0.50 | 0.51 | n/a | 26 | 50 |
| 0.75 | 0.76 | n/a | 52 | 102 |
| 1.00 | 1.01 | n/a | 51 | 152 |
| 1.25 | 1.26 | n/a | 48 | 201 |
| 1.50 | 1.51 | n/a | 45 | 245 |
| 1.75 | 1.76 | n/a | 38 | 284 |
| 2.00 | 2.01 | n/a | 26 | 310 |
| 2.25 | 2.26 | n/a | 25 | 334 |
| 2.50 | 2.51 | n/a | 25 | 359 |

### Culvert / Orifice Structures

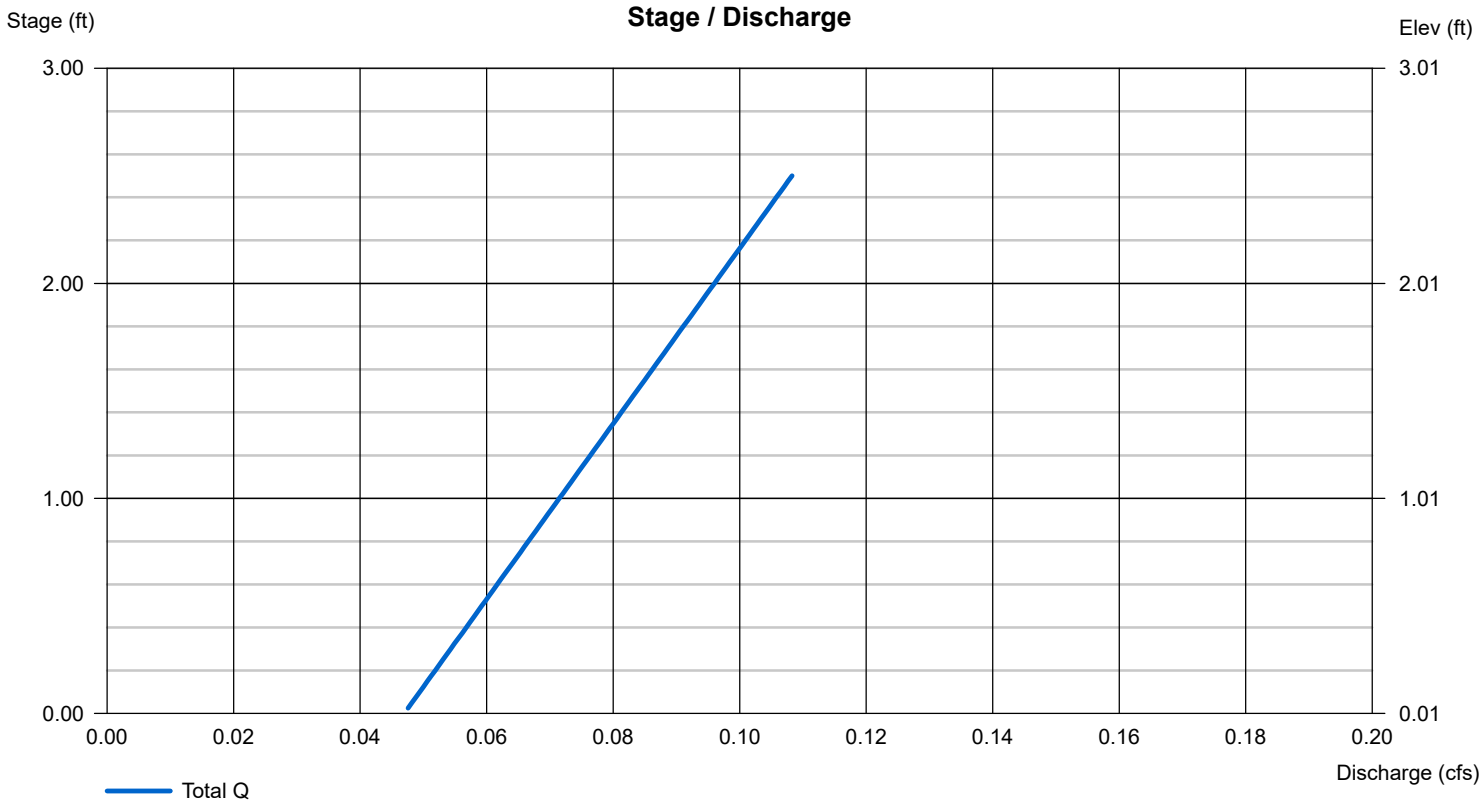
| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Span (in)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **No. Barrels** | = 0 | 0 | 0 | 0 |
| **Invert El. (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Length (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 0.00 | 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 | No | No | No |

### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 0.00 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = --- | --- | --- | --- |
| **Multi-Stage** | = No | No | No | No |

**Exfil.(in/hr)** = 8.270 (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).



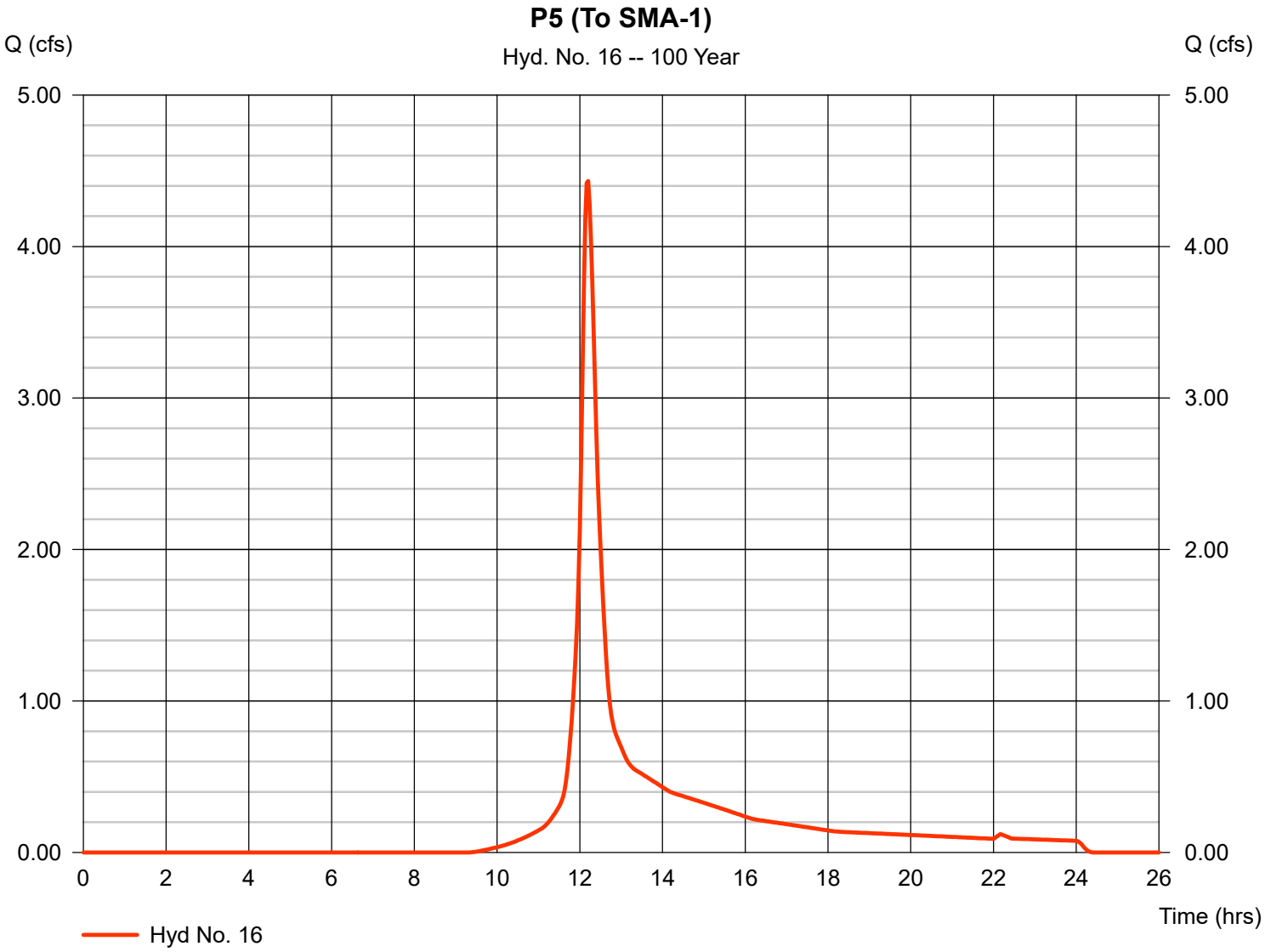
# Hydrograph Report



## Hyd. No. 16

P5 (To SMA-1)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 4.432 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.20 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 18,266 cuft |
| Drainage area | = | 1.820 ac | Curve number | = | 67 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 15.80 min |
| Total precip. | = | 6.40 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

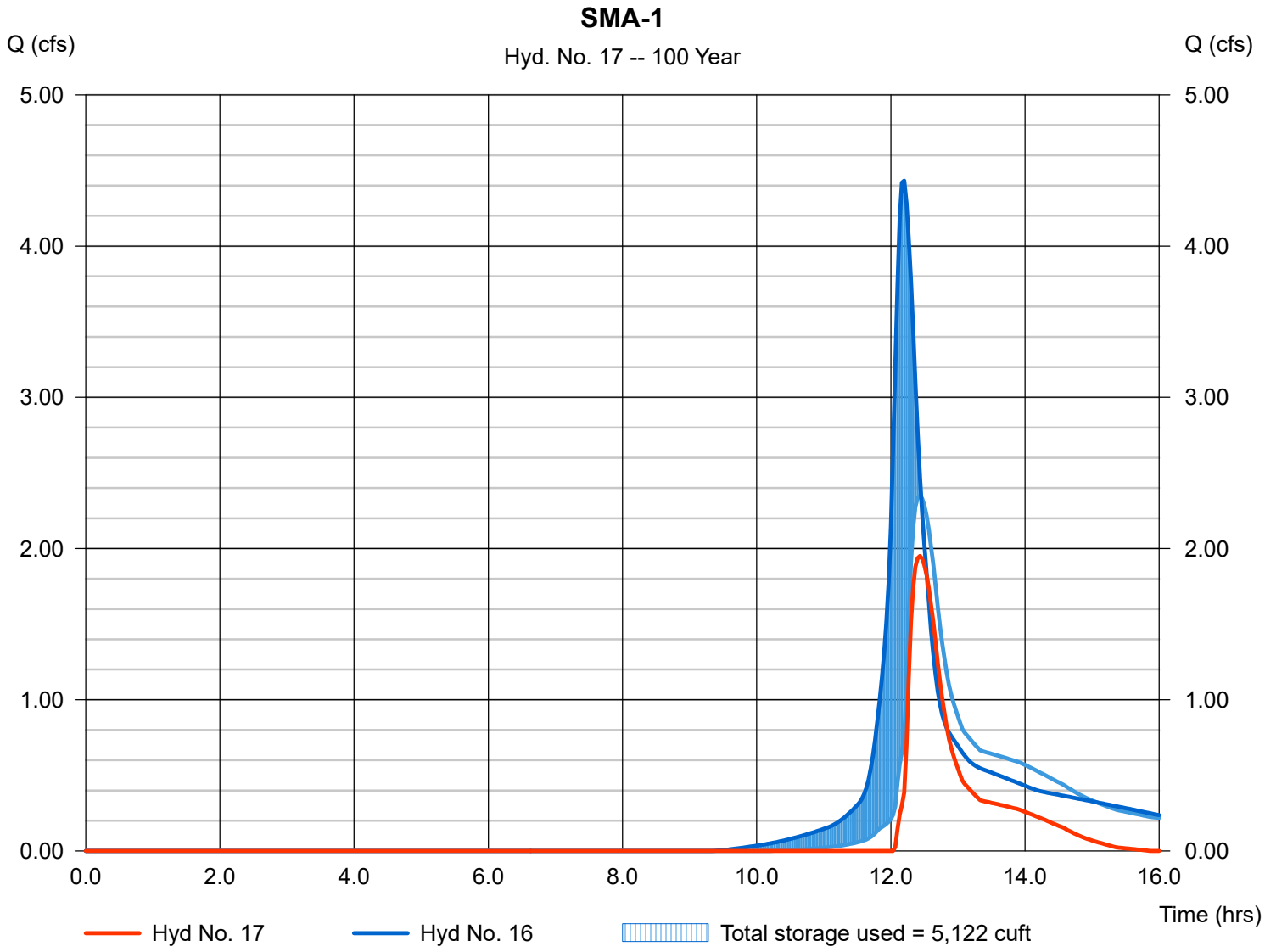


## Hyd. No. 17

SMA-1

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 1.951 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.43 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 5,724 cuft |
| Inflow hyd. No. | = | 16 - P5 (To SMA-1) | Max. Elevation | = | 203.73 ft |
| Reservoir name | = | Inf. Basin (SMA-1) | Max. Storage | = | 5,122 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 8 - Inf. Basin (SMA-1)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 201.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 201.00 | 874 | 0 | 0 |
| 1.00 | 202.00 | 1,556 | 1,199 | 1,199 |
| 2.00 | 203.00 | 2,337 | 1,933 | 3,132 |
| 3.00 | 204.00 | 3,131 | 2,724 | 5,856 |
| 4.00 | 205.00 | 3,473 | 3,300 | 9,156 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 4.00 | 6.00 | 0.00 |
| **Span (in)** | = 12.00 | 4.00 | 6.00 | 0.00 |
| **No. Barrels** | = 1 | 1 | 3 | 0 |
| **Invert El. (ft)** | = 199.96 | 202.40 | 203.20 | 0.00 |
| **Length (ft)** | = 55.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 1.70 | 0.00 | 0.00 | n/a |
| **N-Value** | = .012 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | Yes | Yes | No |

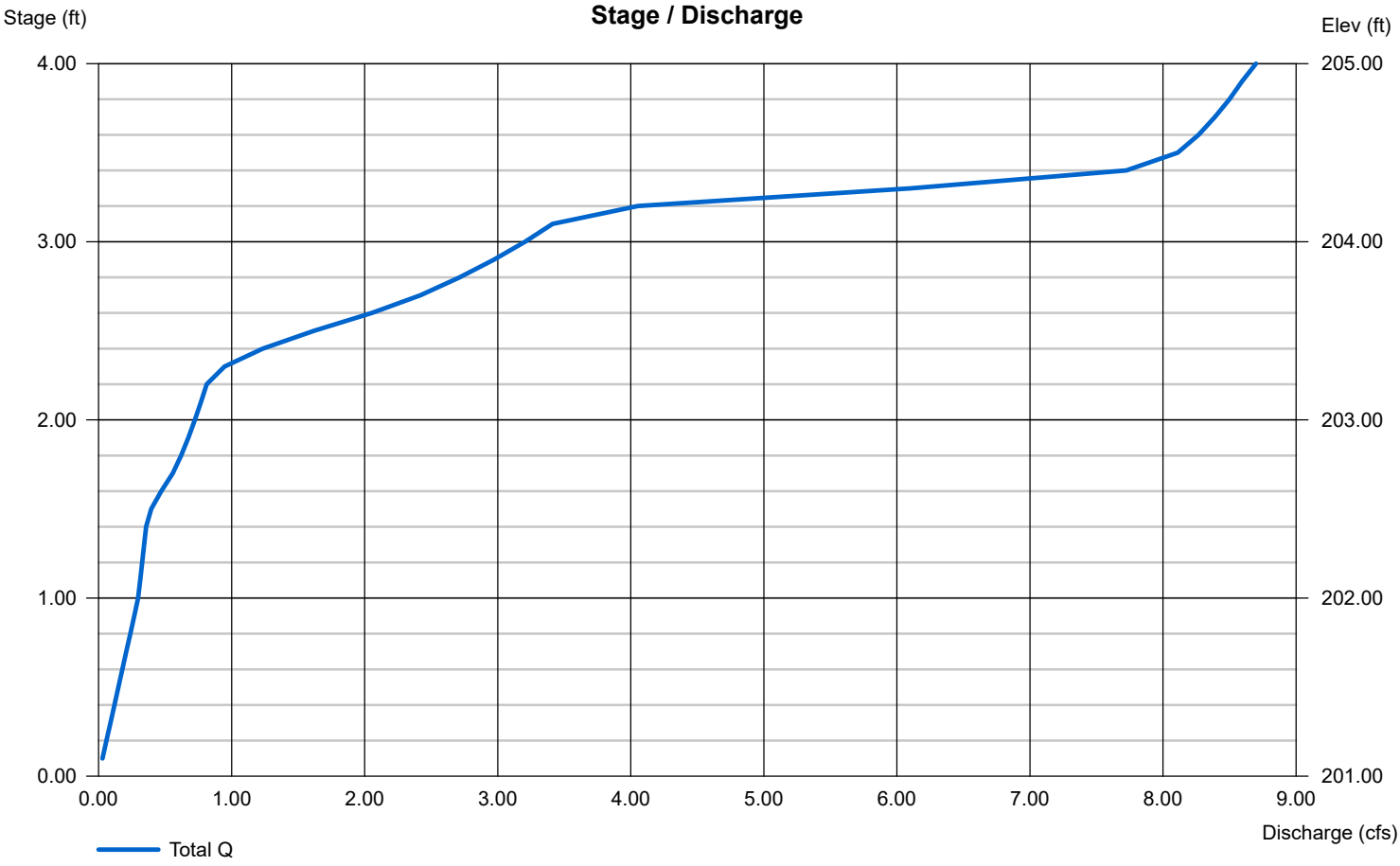
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 204.15 | 205.25 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 2.60 | 3.33 | 3.33 |
| **Weir Type** | = Riser | Broad | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



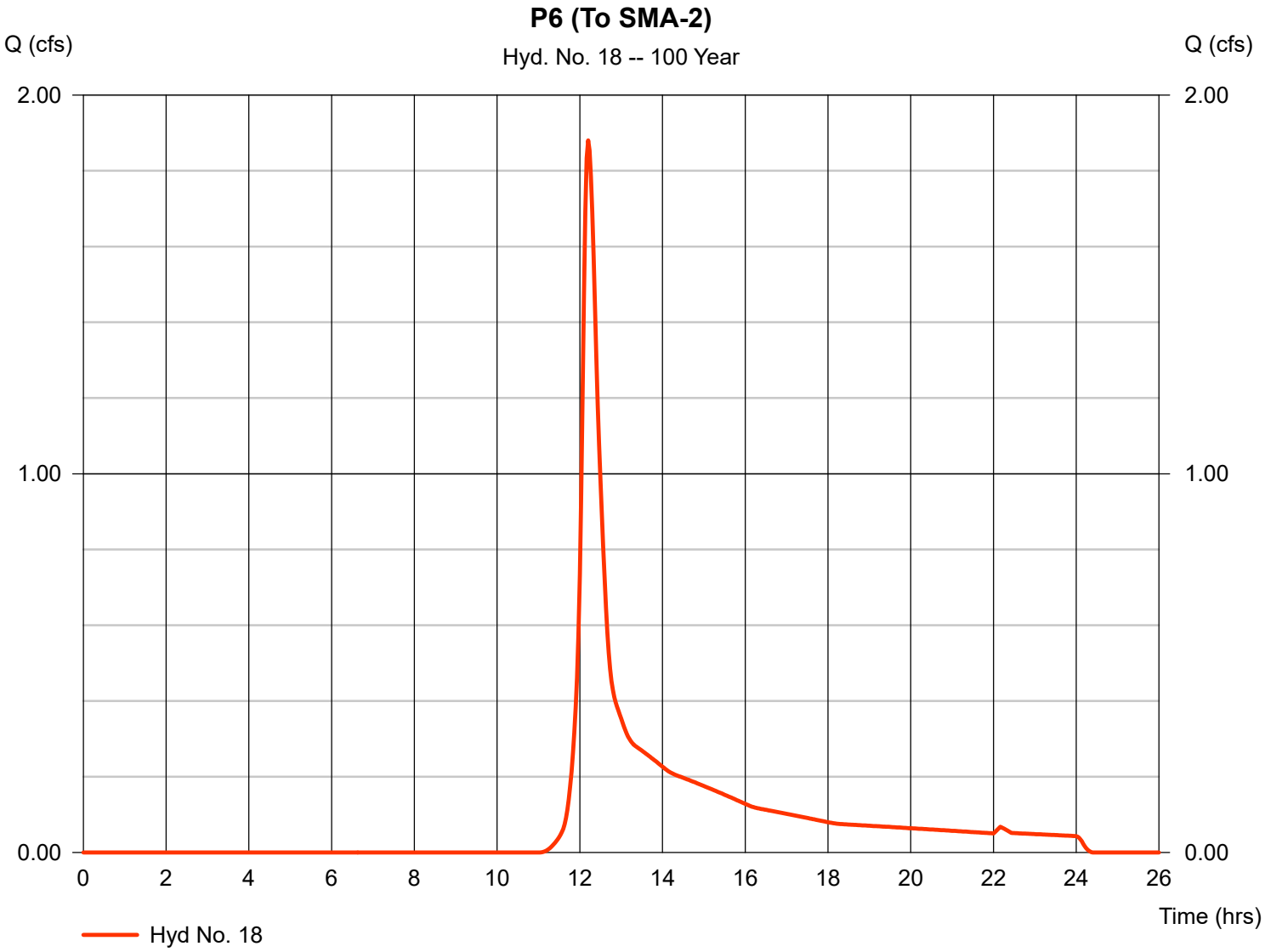
# Hydrograph Report



## Hyd. No. 18

P6 (To SMA-2)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 1.880 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.20 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 8,313 cuft |
| Drainage area | = | 1.290 ac | Curve number | = | 55.8 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 16.40 min |
| Total precip. | = | 6.40 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

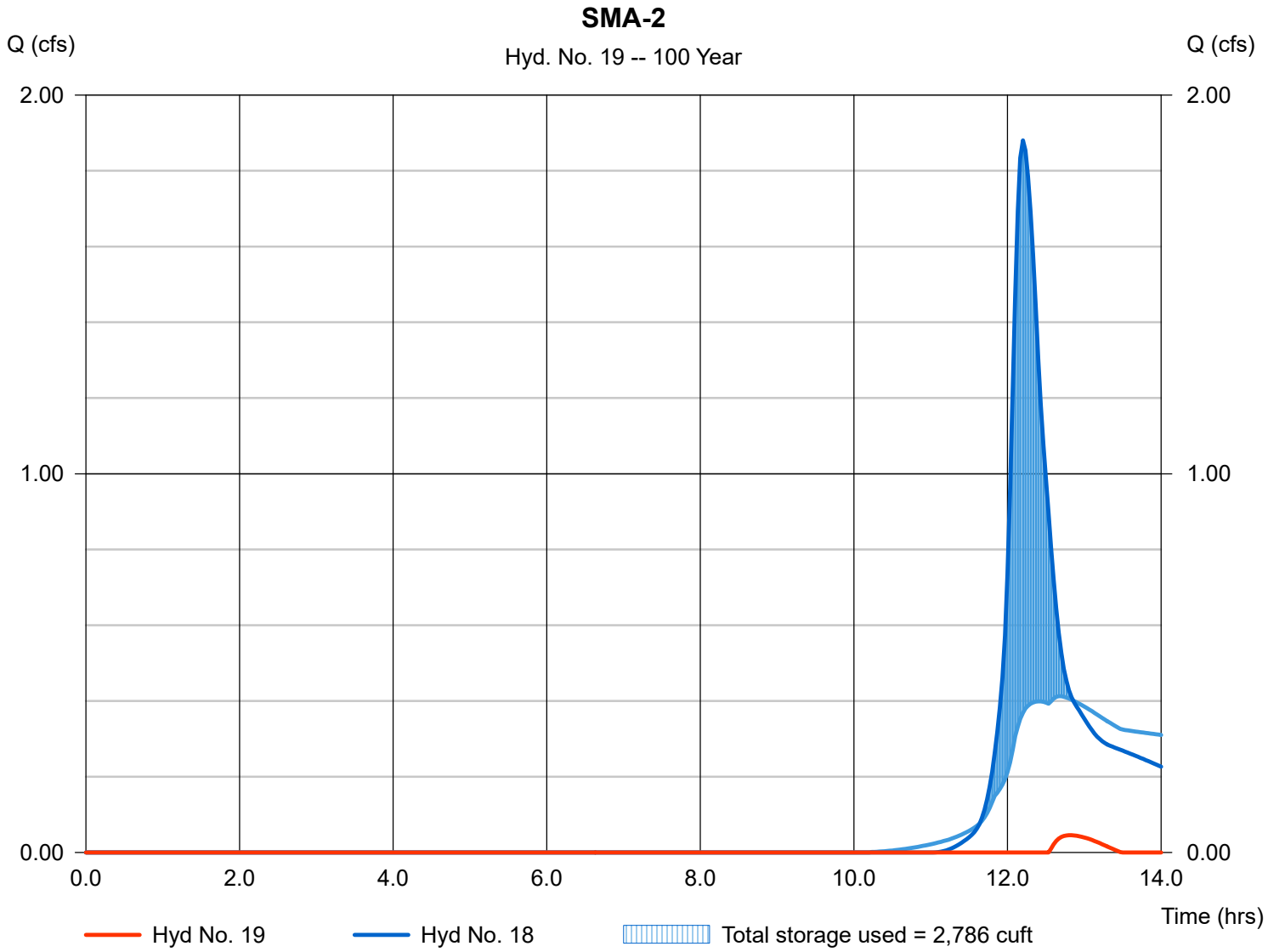


## Hyd. No. 19

SMA-2

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.046 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.80 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 97 cuft |
| Inflow hyd. No. | = | 18 - P6 (To SMA-2) | Max. Elevation | = | 198.08 ft |
| Reservoir name | = | Inf. Basin (SMA-2) | Max. Storage | = | 2,786 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 1 - Inf. Basin (SMA-2)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 196.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 196.00 | 763 | 0 | 0 |
| 1.00 | 197.00 | 1,294 | 1,017 | 1,017 |
| 2.00 | 198.00 | 1,906 | 1,590 | 2,607 |
| 3.00 | 199.00 | 2,775 | 2,327 | 4,933 |
| 4.00 | 200.00 | 3,494 | 3,127 | 8,061 |
| 5.00 | 201.00 | 6,124 | 4,747 | 12,808 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **Span (in)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 3 | 0 | 0 |
| **Invert El. (ft)** | = 195.46 | 198.01 | 0.00 | 0.00 |
| **Length (ft)** | = 22.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 6.00 | 0.00 | 0.00 | n/a |
| **N-Value** | = .012 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | Yes | No | No |

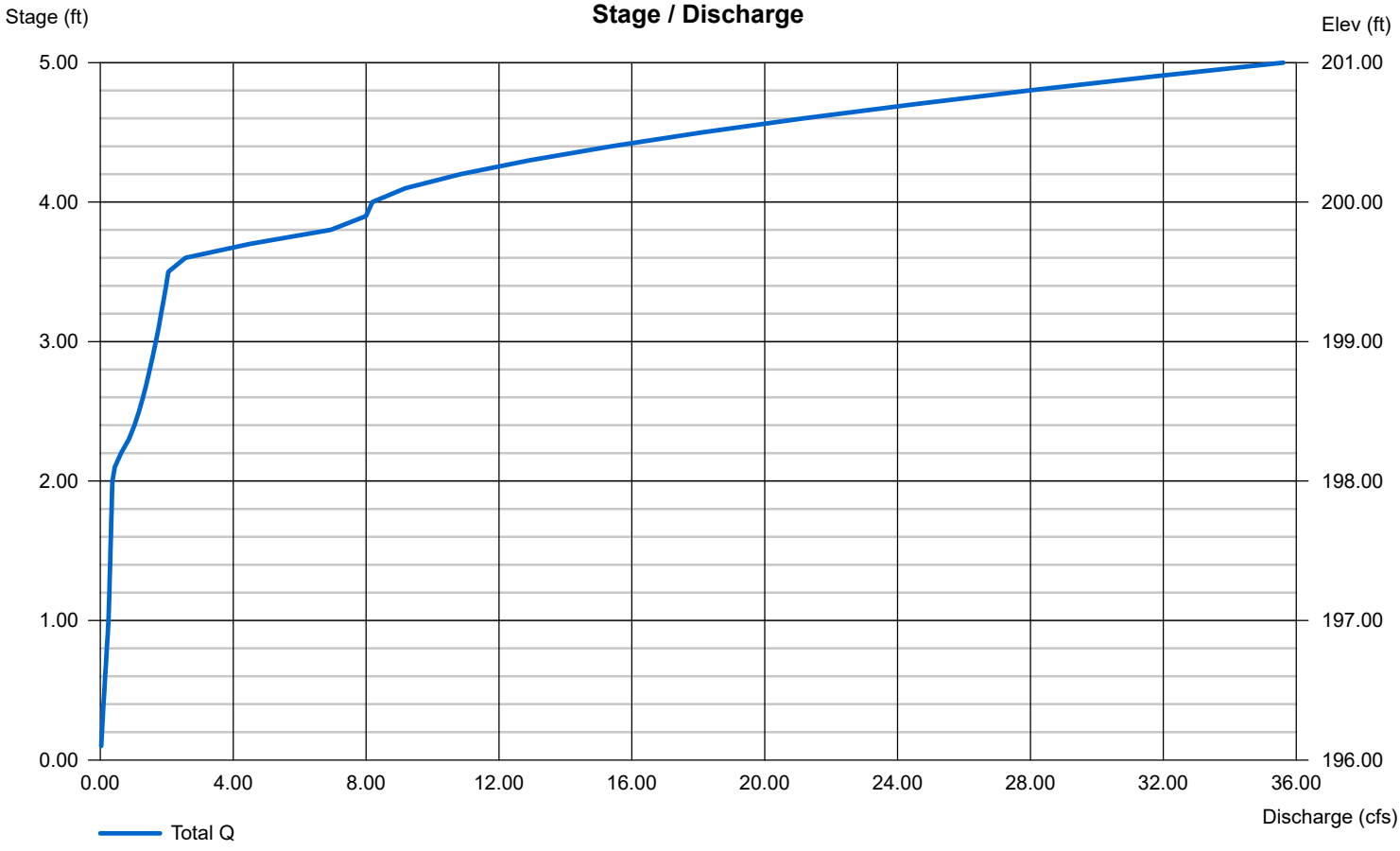
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | 10.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 199.55 | 200.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 2.60 | 3.33 | 3.33 |
| **Weir Type** | = Riser | Broad | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.240 (by Contour)

**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).



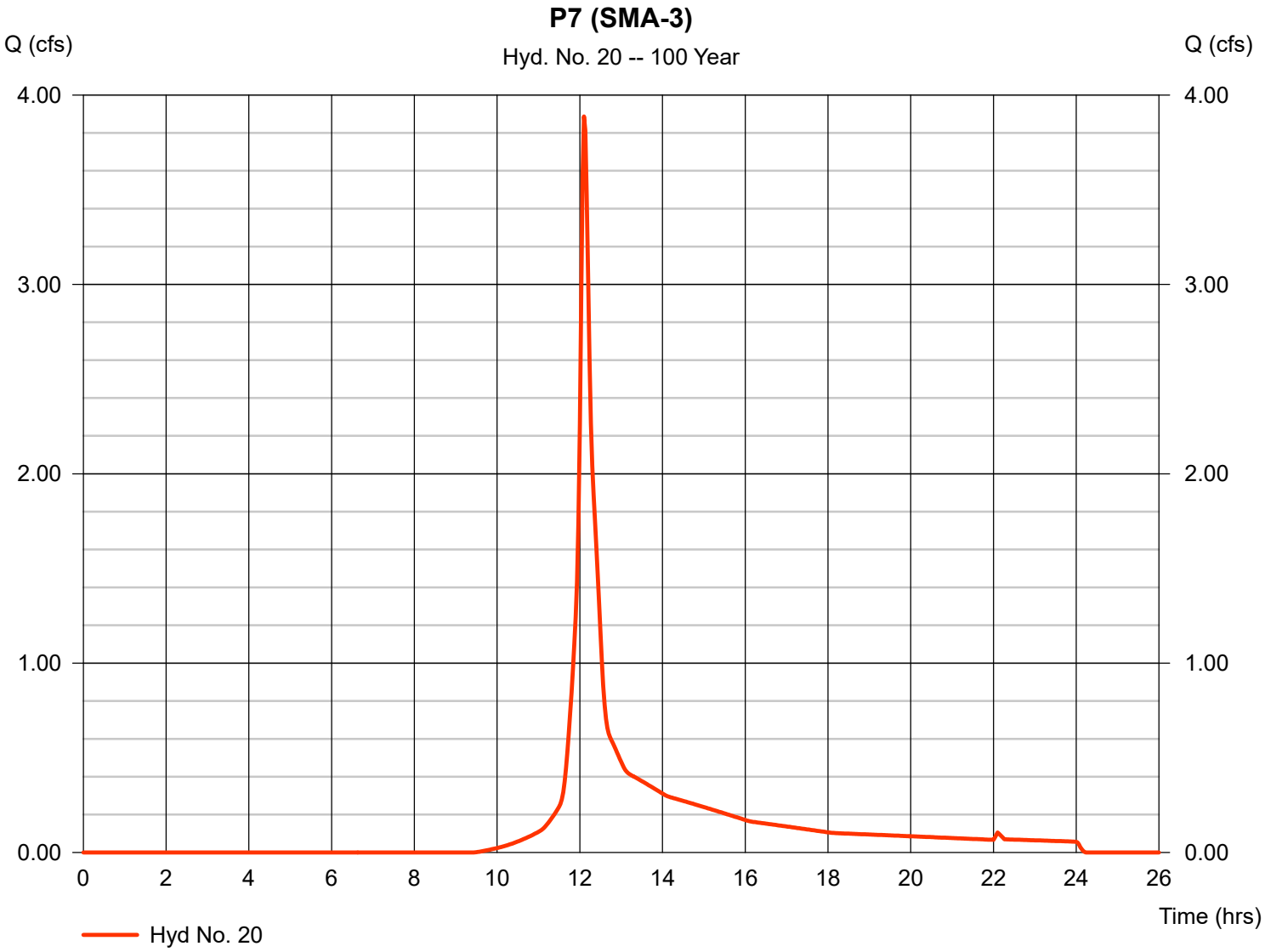
# Hydrograph Report



## Hyd. No. 20

P7 (SMA-3)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 3.887 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.10 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 13,476 cuft |
| Drainage area | = | 1.350 ac | Curve number | = | 66.1 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 9.20 min |
| Total precip. | = | 6.40 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

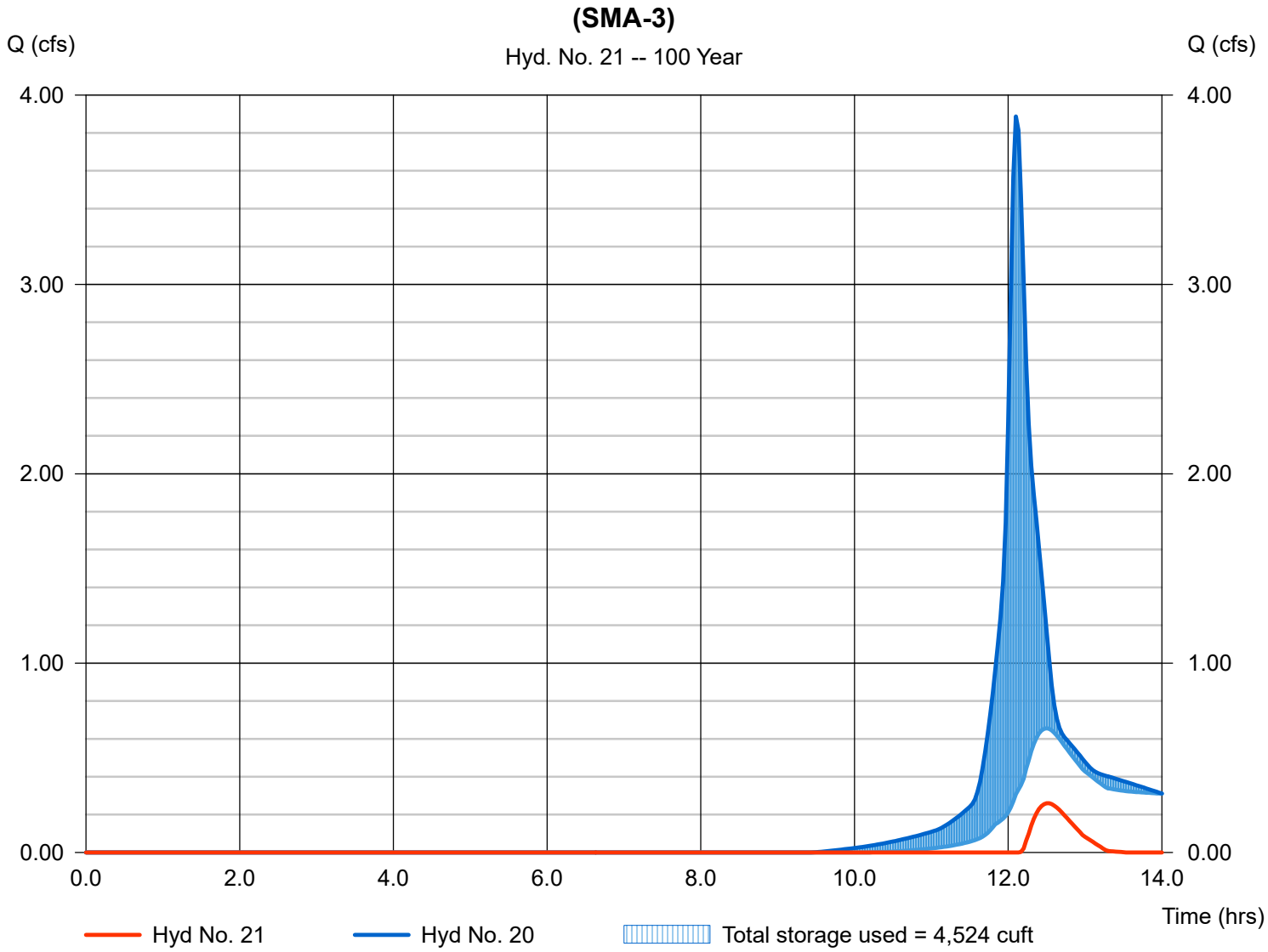


## Hyd. No. 21

(SMA-3)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.260 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.53 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 570 cuft |
| Inflow hyd. No. | = | 20 - P7 (SMA-3) | Max. Elevation | = | 191.23 ft |
| Reservoir name | = | Inf. Basin (SMA-3) | Max. Storage | = | 4,524 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 2 - Inf. Basin (SMA-3)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 190.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 190.00 | 2,875 | 0 | 0 |
| 1.00 | 191.00 | 4,128 | 3,482 | 3,482 |
| 2.00 | 192.00 | 5,063 | 4,587 | 8,069 |
| 3.00 | 193.00 | 5,904 | 5,478 | 13,547 |
| 4.00 | 194.00 | 6,811 | 6,351 | 19,898 |
| 5.00 | 195.00 | 7,847 | 7,322 | 27,221 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **Span (in)** | = 12.00 | 4.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 2 | 0 | 0 |
| **Invert El. (ft)** | = 188.92 | 190.96 | 0.00 | 0.00 |
| **Length (ft)** | = 45.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 2.00 | 0.00 | 0.00 | n/a |
| **N-Value** | = .012 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | Yes | No | No |

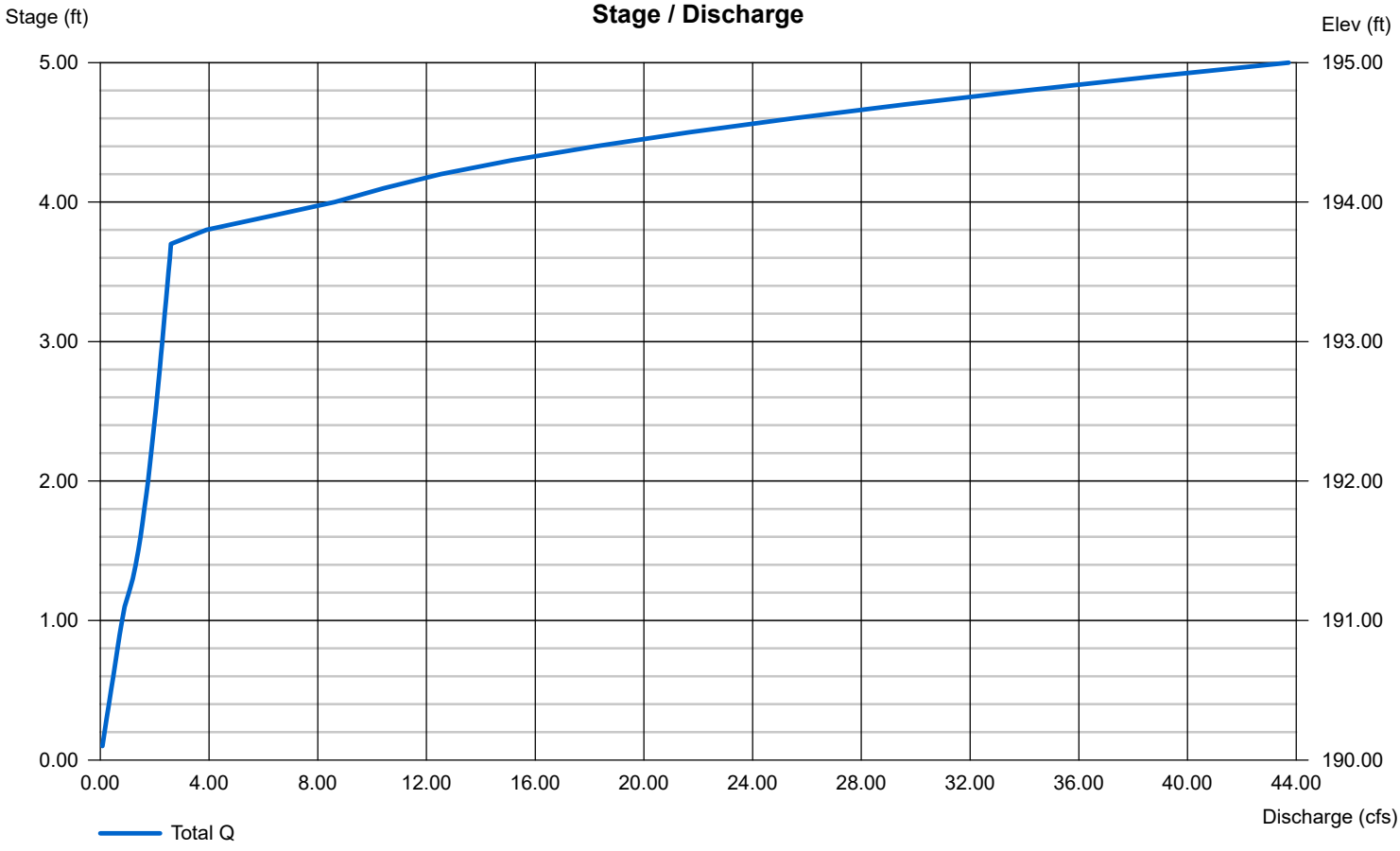
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | 10.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 193.70 | 194.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = Riser | Broad | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



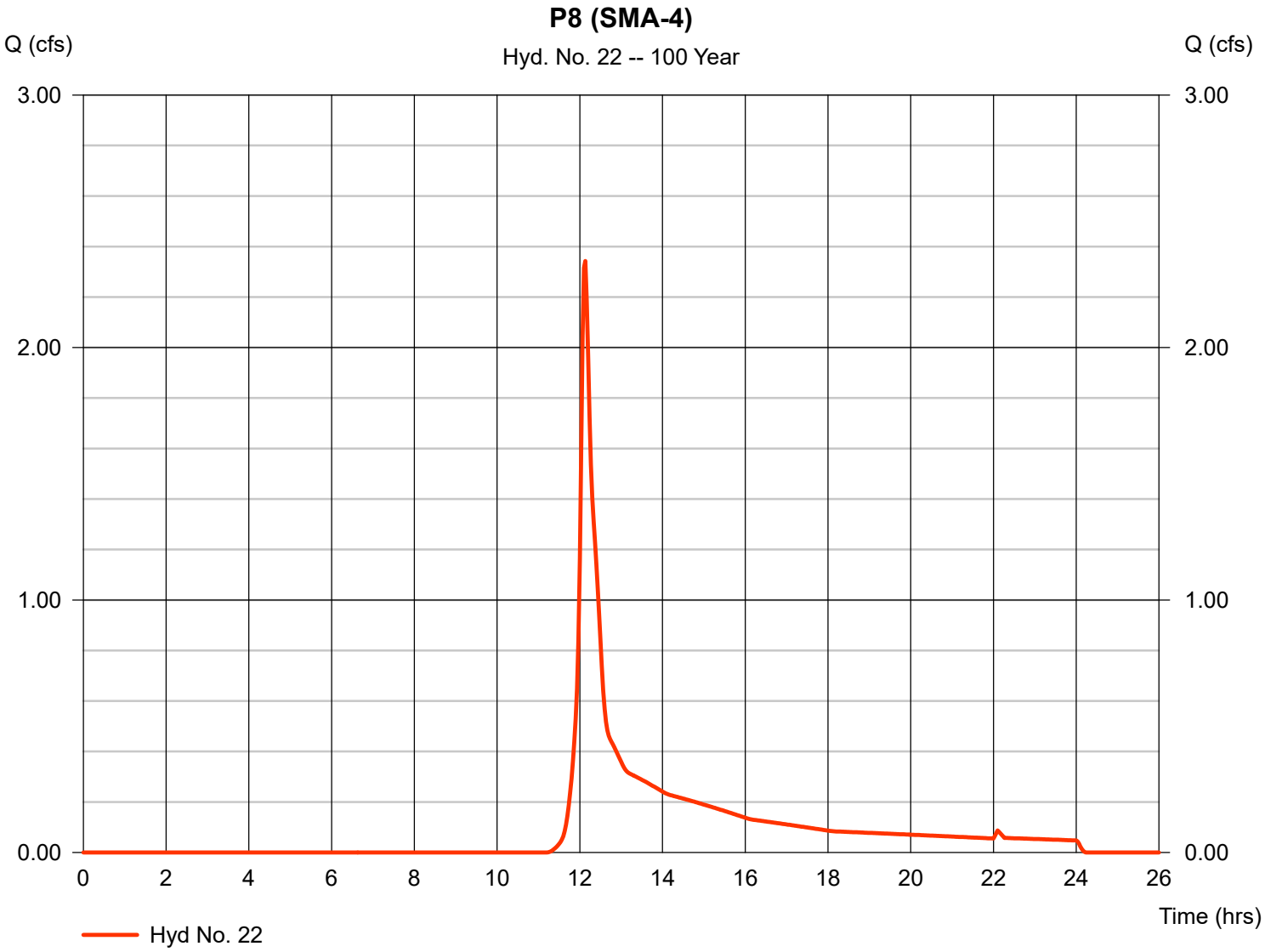
# Hydrograph Report



## Hyd. No. 22

P8 (SMA-4)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 2.342 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.13 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 8,934 cuft |
| Drainage area | = | 1.460 ac | Curve number | = | 54.2 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 9.10 min |
| Total precip. | = | 6.40 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

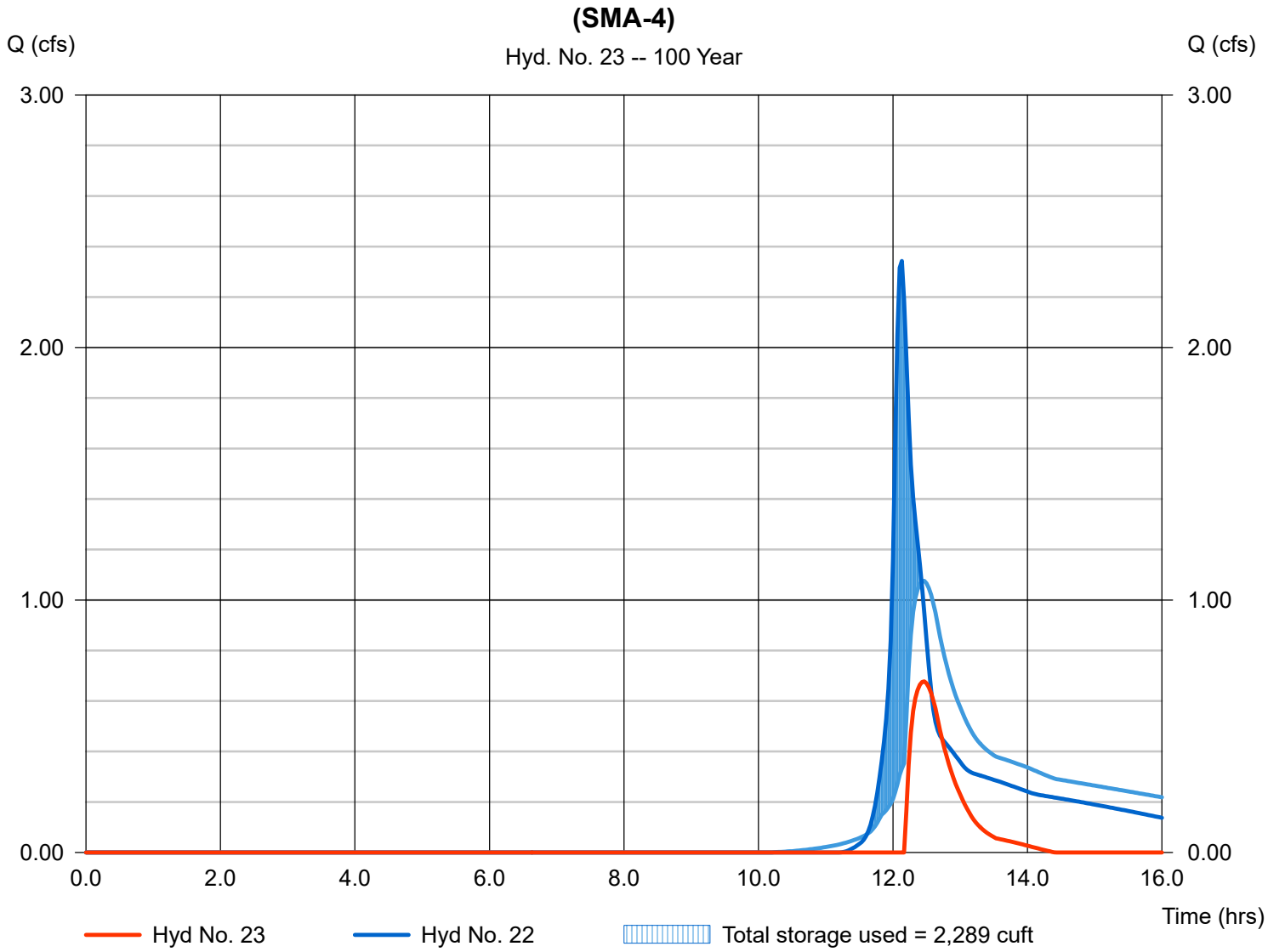


## Hyd. No. 23

(SMA-4)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.678 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.47 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 1,737 cuft |
| Inflow hyd. No. | = | 22 - P8 (SMA-4) | Max. Elevation | = | 186.28 ft |
| Reservoir name | = | Inf. Basin (SMA-1) | Max. Storage | = | 2,289 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



# Pond Report



## Pond No. 4 - Inf. Basin (SMA-1)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 184.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 184.00 | 471 | 0 | 0 |
| 1.00 | 185.00 | 905 | 676 | 676 |
| 2.00 | 186.00 | 1,404 | 1,145 | 1,822 |
| 3.00 | 187.00 | 2,002 | 1,694 | 3,516 |
| 4.00 | 188.00 | 2,694 | 2,339 | 5,855 |
| 5.00 | 189.00 | 3,764 | 3,214 | 9,069 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 5.00 | 0.00 | 0.00 |
| **Span (in)** | = 12.00 | 5.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 2 | 0 | 0 |
| **Invert El. (ft)** | = 183.52 | 185.80 | 0.00 | 0.00 |
| **Length (ft)** | = 57.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 1.00 | 0.00 | 0.00 | n/a |
| **N-Value** | = .012 | .013 | .013 | n/a |
| **Orifice Coeff.** | = 0.60 | 0.60 | 0.60 | 0.60 |
| **Multi-Stage** | = n/a | Yes | No | No |

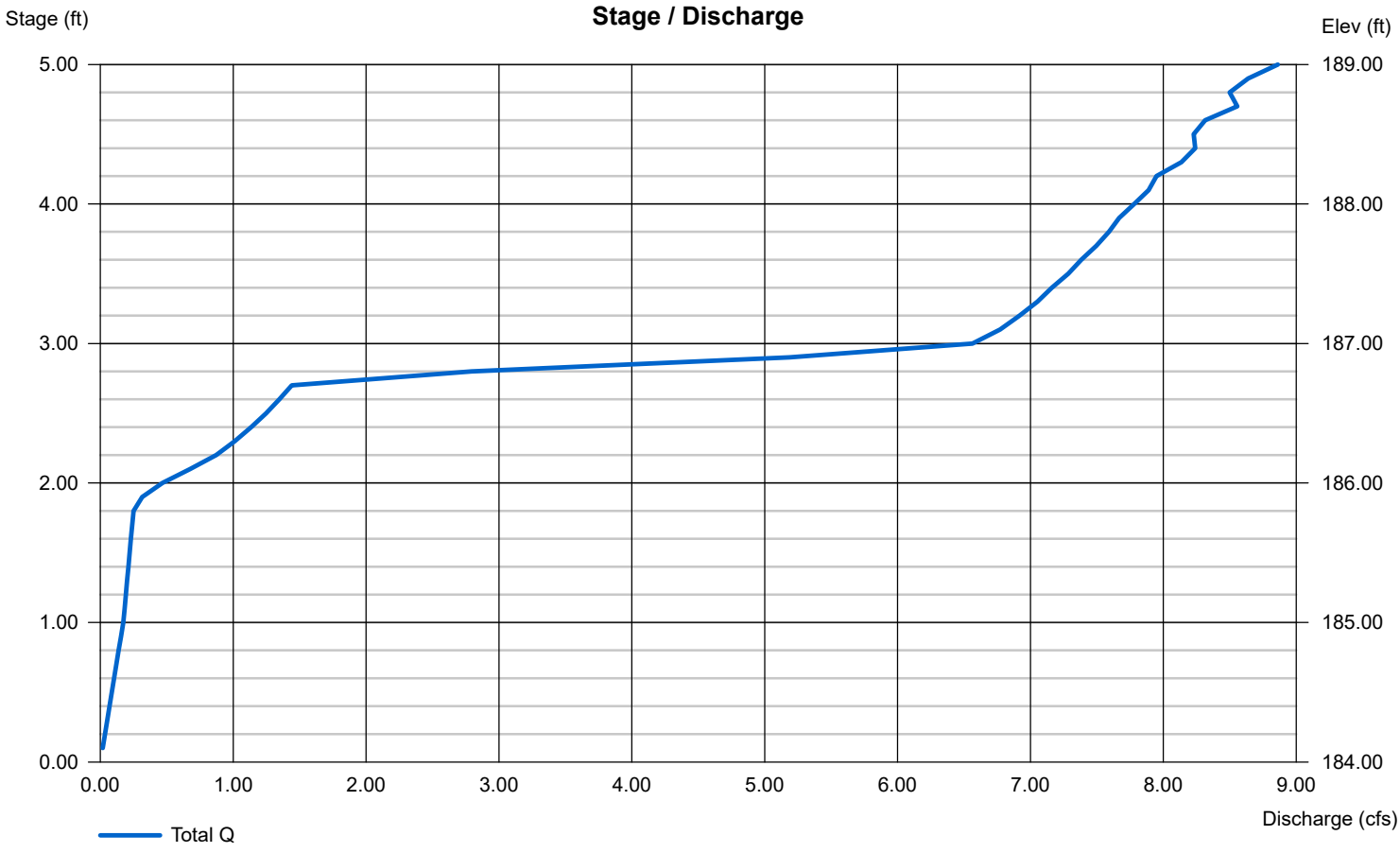
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | 0.00 | 0.00 | 0.00 |
| **Crest El. (ft)** | = 186.70 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = Riser | --- | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



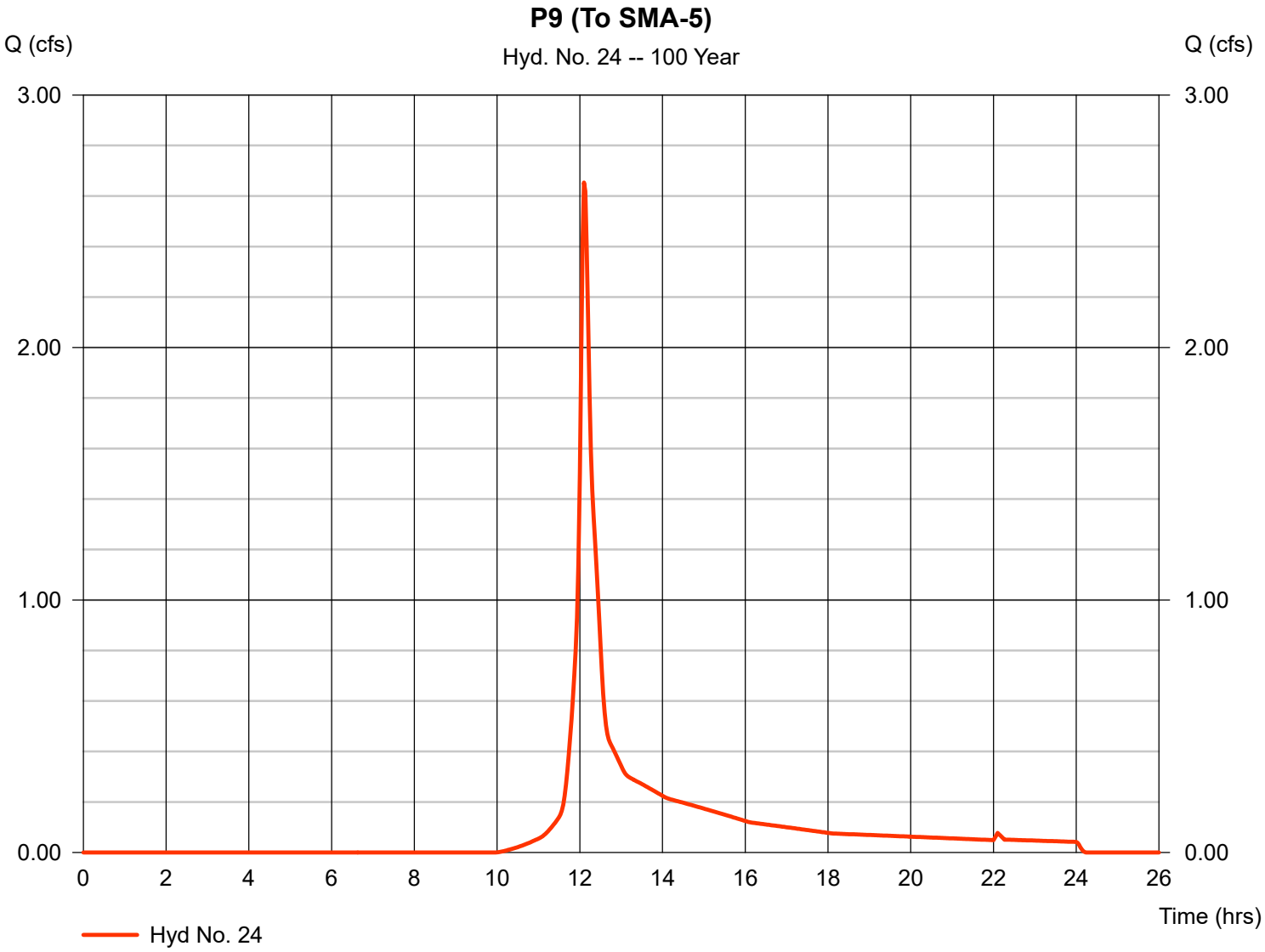
# Hydrograph Report



## Hyd. No. 24

P9 (To SMA-5)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | SCS Runoff | Peak discharge | = | 2.653 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.10 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 9,342 cuft |
| Drainage area | = | 1.050 ac | Curve number | = | 62.9 |
| Basin Slope | = | 0.0 % | Hydraulic length | = | 0 ft |
| Tc method | = | USER | Time of conc. (Tc) | = | 7.30 min |
| Total precip. | = | 6.40 in | Distribution | = | Type III |
| Storm duration | = | 24 hrs | Shape factor | = | 484 |



# Hydrograph Report

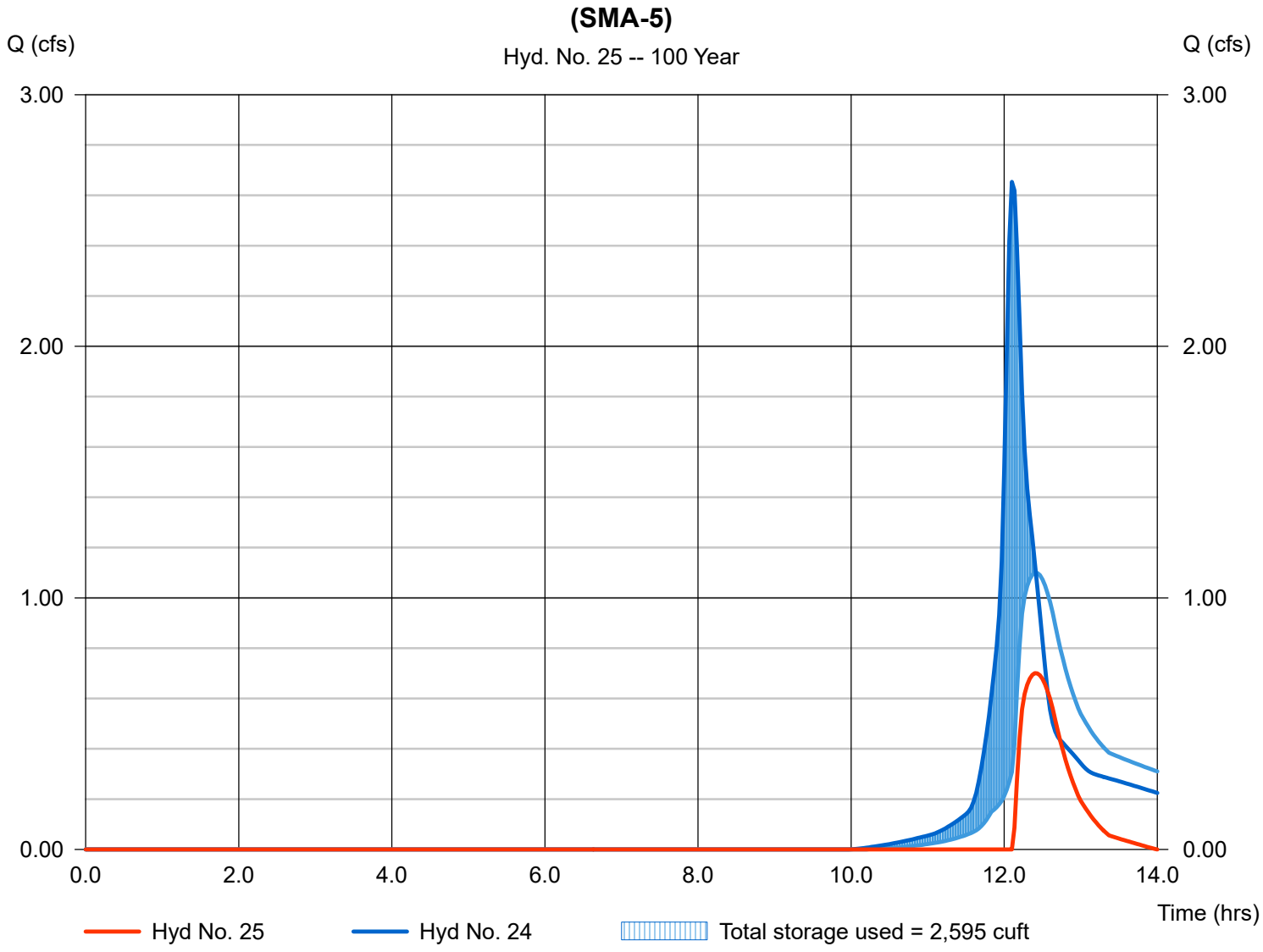


## Hyd. No. 25

(SMA-5)

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Reservoir | Peak discharge | = | 0.701 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.40 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 1,754 cuft |
| Inflow hyd. No. | = | 24 - P9 (To SMA-5) | Max. Elevation | = | 185.49 ft |
| Reservoir name | = | Inf. Basin (SMA-5) | Max. Storage | = | 2,595 cuft |

Storage Indication method used. Exfiltration extracted from Outflow.



## Pond No. 7 - Inf. Basin (SMA-5)

### Pond Data

**Contours -** User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 183.00 ft

### Stage / Storage Table

| Stage (ft) | Elevation (ft) | Contour area (sqft) | Incr. Storage (cuft) | Total storage (cuft) |
|---|---|---|---|---|
| 0.00 | 183.00 | 125 | 0 | 0 |
| 1.00 | 184.00 | 771 | 402 | 402 |
| 2.00 | 185.00 | 1,622 | 1,170 | 1,572 |
| 3.00 | 186.00 | 2,559 | 2,073 | 3,645 |
| 3.80 | 186.80 | 3,620 | 2,459 | 6,104 |

### Culvert / Orifice Structures

| | [A] | [B] | [C] | [PrfRsr] |
|---|---|---|---|---|
| **Rise (in)** | = 12.00 | 5.00 | 0.00 | 0.00 |
| **Span (in)** | = 12.00 | 5.00 | 0.00 | 0.00 |
| **No. Barrels** | = 1 | 2 | 0 | 0 |
| **Invert El. (ft)** | = 182.20 | 185.00 | 0.00 | 0.00 |
| **Length (ft)** | = 60.00 | 0.00 | 0.00 | 0.00 |
| **Slope (%)** | = 1.00 | 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 | No | No |

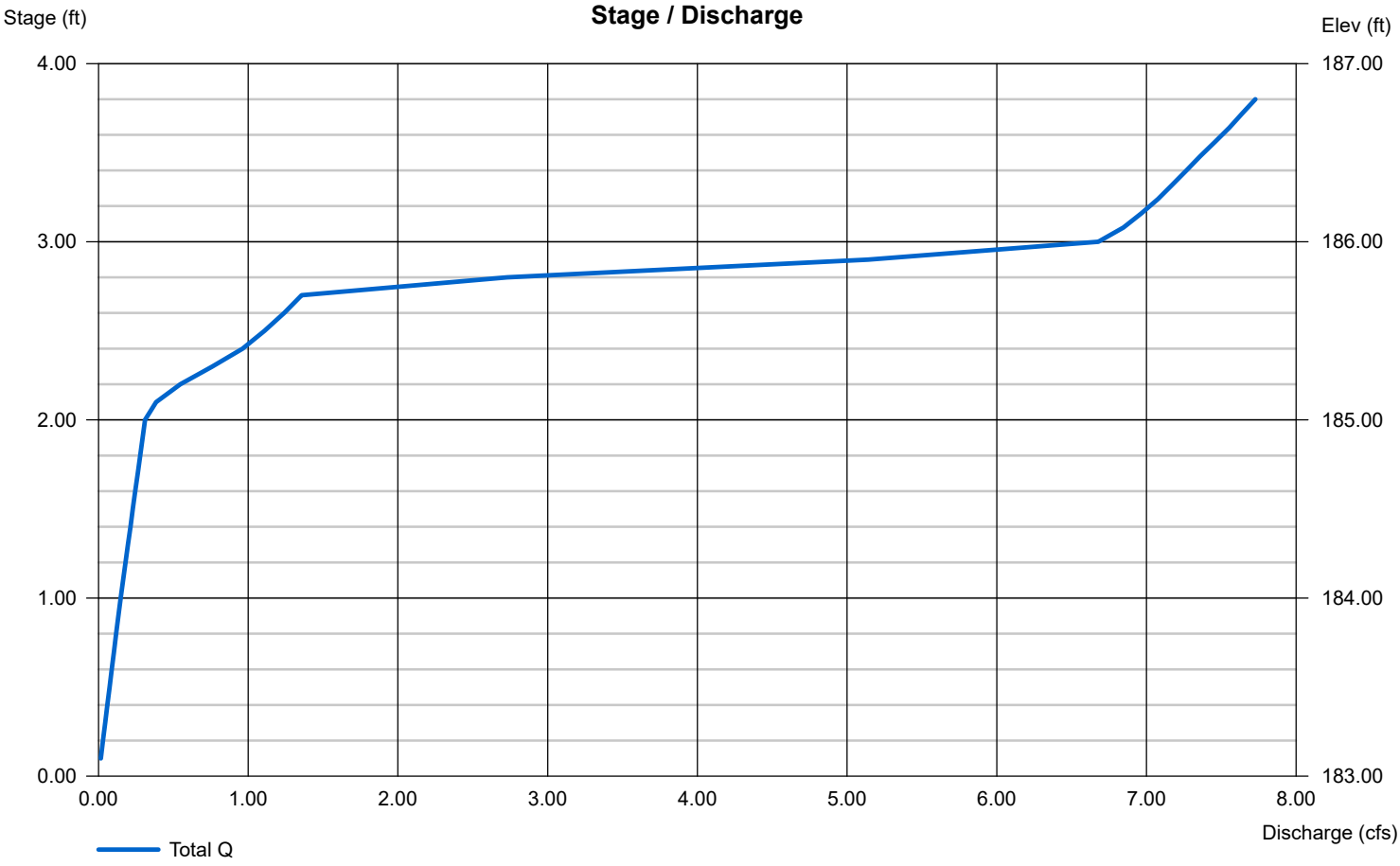
### Weir Structures

| | [A] | [B] | [C] | [D] |
|---|---|---|---|---|
| **Crest Len (ft)** | = 12.00 | Inactive | 0.00 | 0.00 |
| **Crest El. (ft)** | = 185.70 | 0.00 | 0.00 | 0.00 |
| **Weir Coeff.** | = 3.33 | 3.33 | 3.33 | 3.33 |
| **Weir Type** | = Riser | Broad | --- | --- |
| **Multi-Stage** | = Yes | No | No | No |

**Exfil.(in/hr)** = 8.270 (by Contour)

**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).



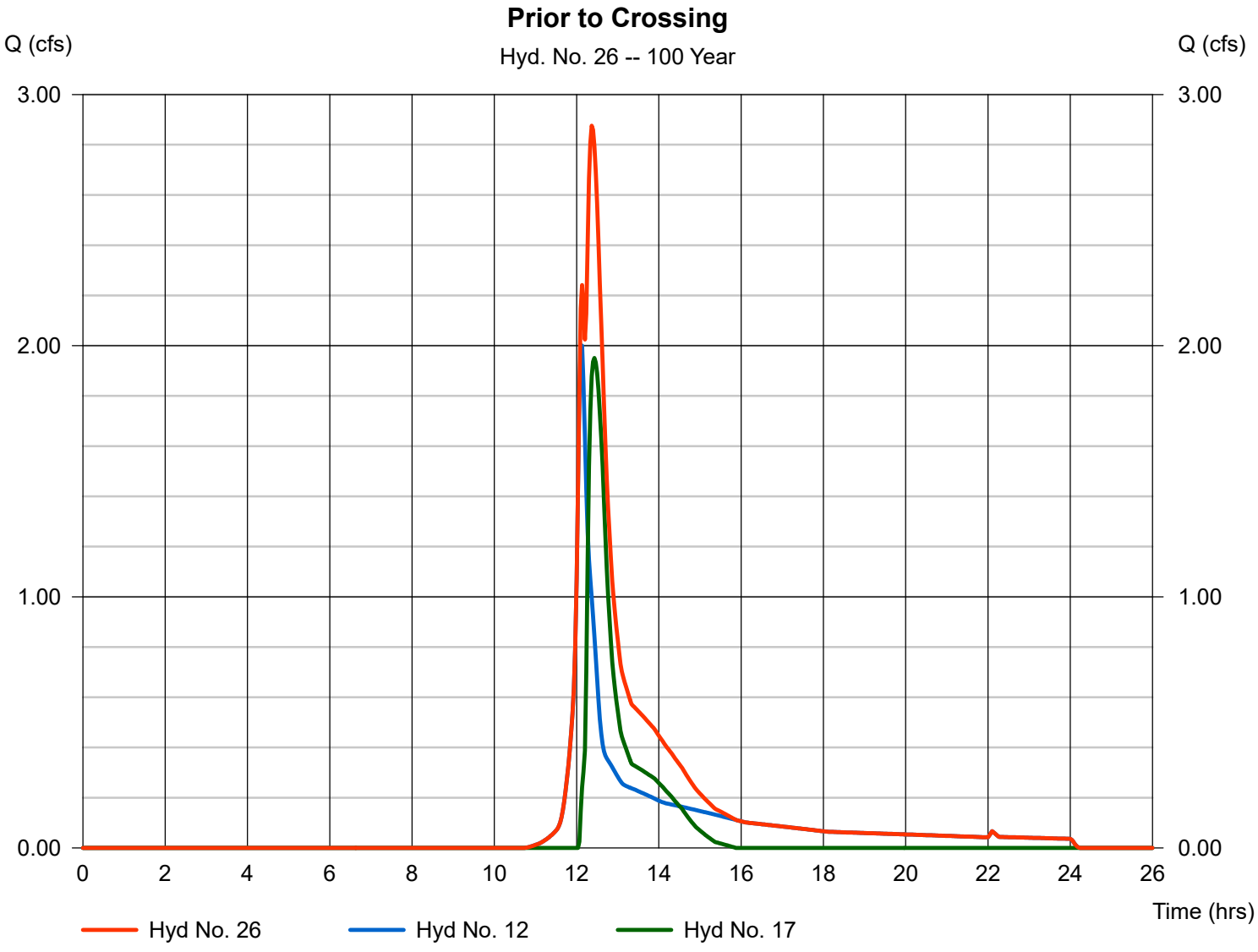
# Hydrograph Report



## Hyd. No. 26

Prior to Crossing

| | | | |
|---|---|---|---|
| Hydrograph type | = Combine | Peak discharge | = 2.876 cfs |
| Storm frequency | = 100 yrs | Time to peak | = 12.37 hrs |
| Time interval | = 2 min | Hyd. volume | = 13,064 cuft |
| Inflow hyds. | = 12, 17 | Contrib. drain. area | = 1.010 ac |



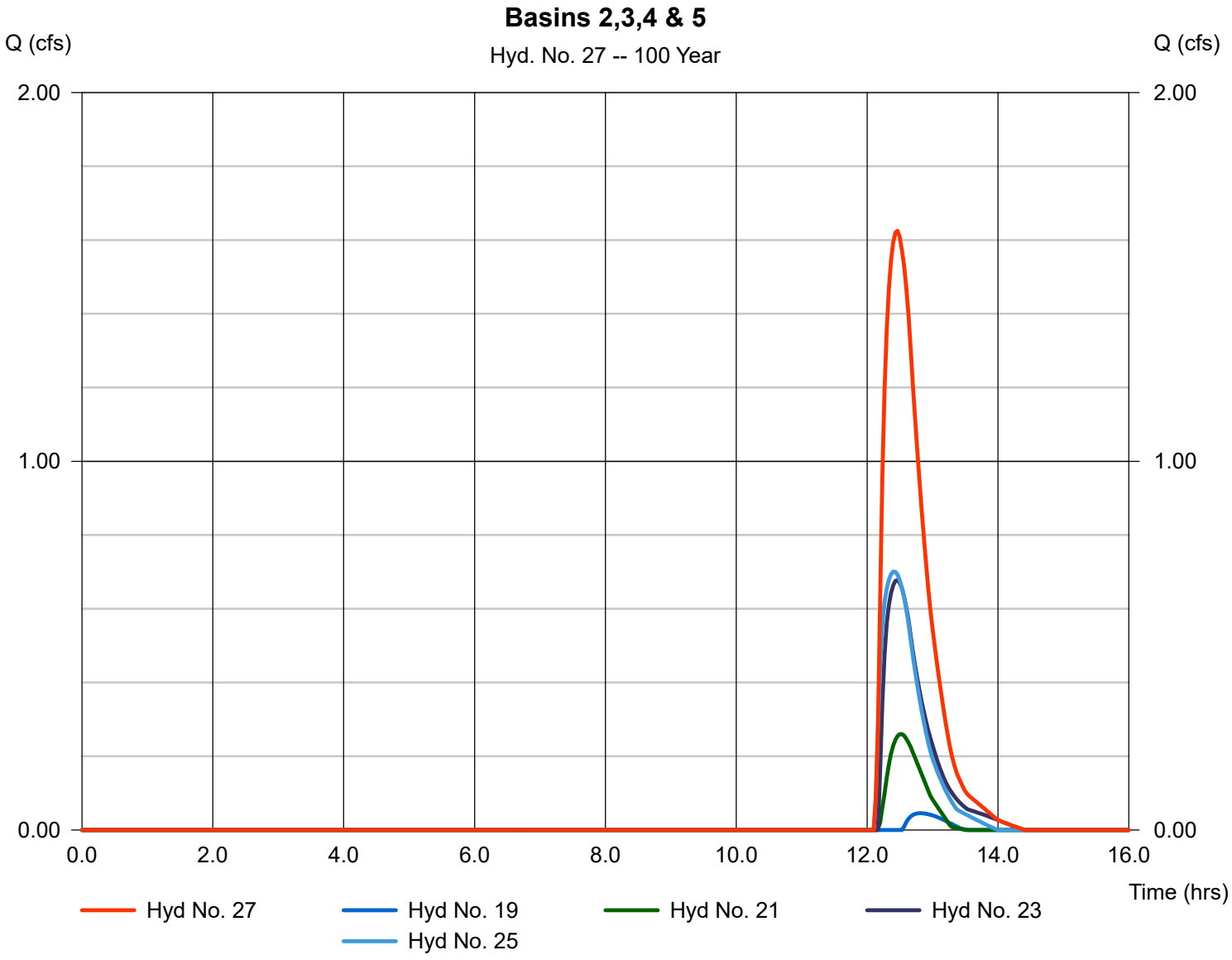
# Hydrograph Report



## Hyd. No. 27

Basins 2,3,4 & 5

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Combine | Peak discharge | = | 1.625 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.47 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 4,160 cuft |
| Inflow hyds. | = | 19, 21, 23, 25 | Contrib. drain. area | = | 0.000 ac |



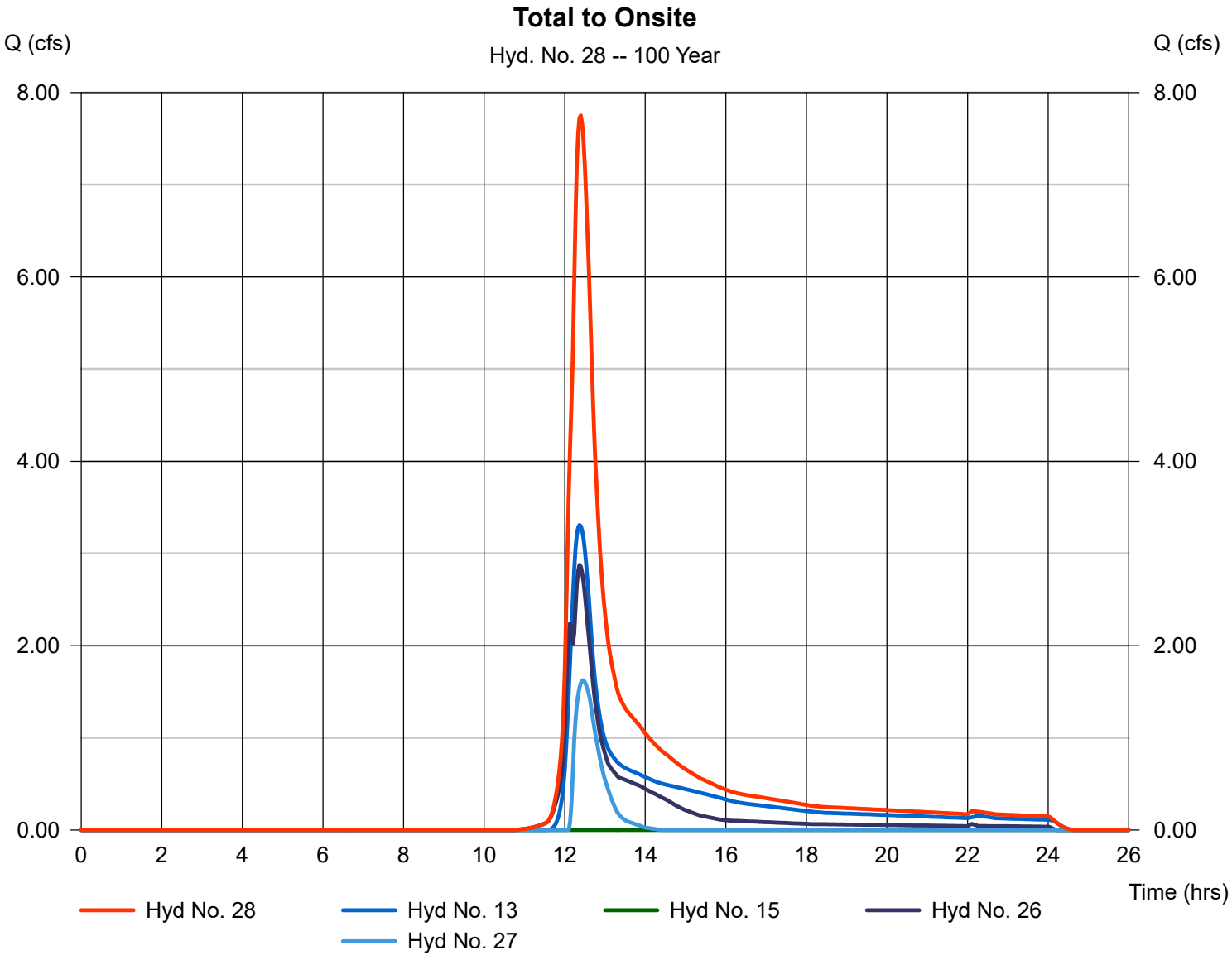
# Hydrograph Report



## Hyd. No. 28

Total to Onsite

| | | | | | |
|---|---|---|---|---|---|
| Hydrograph type | = | Combine | Peak discharge | = | 7.751 cfs |
| Storm frequency | = | 100 yrs | Time to peak | = | 12.40 hrs |
| Time interval | = | 2 min | Hyd. volume | = | 36,160 cuft |
| Inflow hyds. | = | 13, 15, 26, 27 | Contrib. drain. area | = | 3.660 ac |



DESIGN STORM: 100 YEAR
DATE: 1/31/2024
DONE BY: PFK
FILE: 5371 RATIONAL METHOD AB.wb3

STORM SEWER DESIGN

(ADS N-12)"n"= 0.010 4"-10"
(ADS N-12)"n"= 0.012 12"-36"
(ADS N-12)"n"= 0.013 42"-60"
(Cast Iron)"n"= 0.011
(RCP)"n"=0.013

PROJECT: SM-5371A
LOCATION Stow, MA

| FROM | TO | LENGTH (FT) | TRIBUTARY AREA | | TIME OF FLOW | | RUNOFF COEFF. "C" | RAINFALL INTENSITY (IN/HR) | "Q" TOTAL RUNOFF (CFS) | SLOPE of PIPE (FT/FT) | DIAM (IN) | MANN. "n" | CAPACITY FULL (CFS) | VELOCITY FULL (FPS) | DESIGN FLOW | | | | | FALL IN PIPE (FT) | DRAIN INV. ELEVATION | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | INCR. (ACRES) | TOTAL (ACRES) | TO UPPER END (MIN) | TIME IN SECTION (MIN) | | | | | | | | | VELOCITY (FPS) | VELOCITY HEAD (FT) | DEPTH OF FLOW (FT) | TOTAL ENERGY HEAD (FT) | MANHOLE INVERT DROP (FT) | | UPPER END | LOWER END |
| CB-1 | FE-1 | 48 | | 0.10 | 10 | 0.22 | 0.67 | 7.6 | 0.49 | 0.012 | 12 | 0.012 | 4.23 | 5.39 | 3.60 | 0.20 | 0.23 | 0.43 | | 0.58 | 203.54 | 202.96 |
| CB-2 | FE-2 | 32 | | 0.25 | 10 | 0.10 | 0.42 | 7.6 | 0.81 | 0.023 | 12 | 0.012 | 5.82 | 7.41 | 5.20 | 0.42 | 0.25 | 0.67 | | 0.73 | 203.69 | 202.96 |
| CB-3 | FE-3 | 71 | | 0.12 | 10 | 0.32 | 0.65 | 7.6 | 0.58 | 0.011 | 12 | 0.012 | 4.04 | 5.14 | 3.65 | 0.21 | 0.26 | 0.46 | | 0.78 | 196.66 | 195.88 |
| CB-4 | FE-4 | 59 | | 0.27 | 10 | 0.21 | 0.49 | 7.6 | 1.02 | 0.014 | 12 | 0.012 | 4.60 | 5.86 | 4.71 | 0.34 | 0.32 | 0.66 | | 0.84 | 196.72 | 195.88 |
| CB-5 | FE-5 | 46 | | 0.83 | 10 | 0.12 | 0.45 | 7.6 | 2.85 | 0.016 | 12 | 0.012 | 4.82 | 6.14 | 6.38 | 0.63 | 0.55 | 1.18 | | 0.72 | 190.70 | 189.98 |
| CB-6 | FE-6 | 27 | | 0.30 | 10 | 0.07 | 0.60 | 7.6 | 1.35 | 0.024 | 12 | 0.012 | 5.98 | 7.61 | 6.12 | 0.58 | 0.32 | 0.90 | | 0.65 | 190.63 | 189.98 |
| CB-7 | FE-7 | 29 | | 0.62 | 10 | 0.11 | 0.39 | 7.6 | 1.82 | 0.007 | 12 | 0.012 | 3.28 | 4.18 | 4.28 | 0.28 | 0.53 | 0.81 | | 0.21 | 184.17 | 183.96 |
| CB-8 | FE-8 | 45 | | 0.14 | 10 | 0.29 | 0.61 | 7.6 | 0.66 | 0.004 | 12 | 0.012 | 2.44 | 3.10 | 2.62 | 0.11 | 0.35 | 0.46 | | 0.18 | 184.14 | 183.96 |
| CB-9 | FE-9 | 12 | | 0.93 | 10 | 0.03 | 0.53 | 7.6 | 3.76 | 0.016 | 12 | 0.012 | 4.85 | 6.17 | 6.82 | 0.72 | 0.66 | 1.38 | | 0.19 | 183.19 | 183.00 |
| Forest Headwall | FE-10 | 44 | | 0.20 | 10 | 0.21 | 0.19 | 7.6 | 0.28 | 0.020 | 15 | 0.012 | 10.00 | 8.15 | 3.47 | 0.19 | 0.14 | 0.32 | | 0.90 | 193.50 | 192.60 |
| | | | | | | | | | | | | 0.012 | | | | | | | | | | |
| Lot 1-Headwall | DMH 2 | 184 | | 10.44 | 10.37 | 0.31 | 0.16 | 7.6 | 12.70 | 0.020 | 18 | 0.012 | 16.00 | 9.06 | 10.03 | 1.56 | 1.01 | 2.57 | | 3.64 | 203.30 | 199.66 |
| DMH 2 | FE-11 | 28 | | 10.44 | 10 | 0.04 | 0.16 | 7.6 | 12.70 | 0.026 | 18 | 0.012 | 18.24 | 10.33 | 11.13 | 1.92 | 0.92 | 2.84 | | 0.72 | 199.66 | 198.94 |
| | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | |

CB - CATCH BASIN
DI - DROP INLET
DMH- DRAIN MANHOLE
INF - INFILTRATION AREA
FE- FLARED END