275 W. Wisconsin Avenue, Suite 300
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www.graef-usa.com

GRAEF

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MEMORANDUM

TO: City of La Crosse

FROM: Joy Corona, PE, CFM

DATE: March 28, 2025

SUBJECT: MCHS Loading Dock, La Crosse

The Mayo Clinic Health System is proposed expand on its recently completed Bed Towner addition. This project will include a building addition and loading dock. This memorandum is intended to demonstrate how the project complies with the post-construction stormwater management provisions of Article II of the La Crosse municipal code.

105.61.b.4(a): Redevelopment sites are required to control total suspended solids carried in runoff from the post-construction site, based on a 40 percent of load from parking areas and roads.

AS DEMONSTRATED IN THE ATTACHED PRE- AND POST-DEVELOPMENT DRAINAGE EXHIBITS THE PROPOSED PROJECT RESULTS IN A DECREASE OF 13,543-SF (0.31) OF SURFACE PARKING AREA. PER DNR GUIDANCE ADDITIONAL MEASURES TO REDUCE TSS ARE NOT REQUIRED SINCE THERE IS NO INCREASE IN SURFACE PARKING.

105.61.b.4(b): BMPs shall be employed to maintain or reduce the two-year, 24-hour; and the ten-year, 24-hour post-construction peak runoff discharge rates to the two-year, 24-hour; and the ten-year, 24-hour pre-development peak runoff discharge rates respectively.

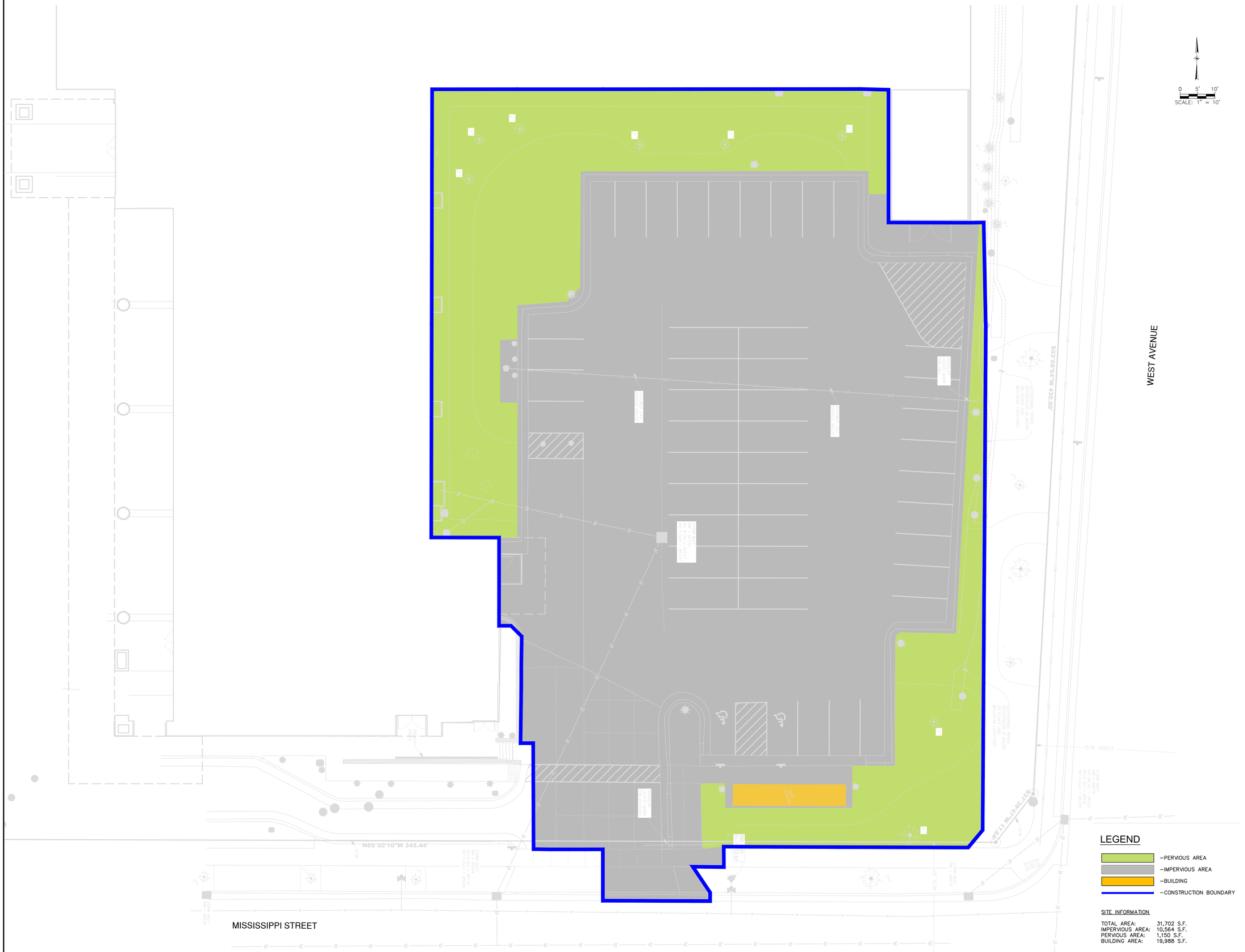
THE DESIGN RESULTS IN AN OVERALL INCREASE OF PEAK DISCHARGE AS A RESULT OF THE MINOR INCREASE IN IMPERVIOUS SURFACE AREA. APPROXIMATELY 93' OF PIPE WAS UPSIZED TO 30" PIPE AND A RESTRICTOR INSTALLED TO ACHIEVE COMPLIANCE WITH THIS PROVISION.

	2-yr	10-yr
Pre-Development	2.3	2.3
Post-Development	3.63	3.63

Enclosures:

- Pre-Development Drainage Exhibit
- Post-Development Drainage Exhibit
- HydroCAD Output

2024-0364



Kahler Slater

GRAEF

NOT FOR CONSTRUCTION

Revisions

COMMERCIAL DESIGN REVIEW

SCOPE DOCUMENTS

Drawing Date
03/28/2025

MCHS LA CROSSE LOADING DOCK

850 West Avenue S
La Crosse, WI 54601

Project No. Mayo Clinic Health System
224044.02 LALH24C001

Sheet Title
EXISTING CONDITIONS

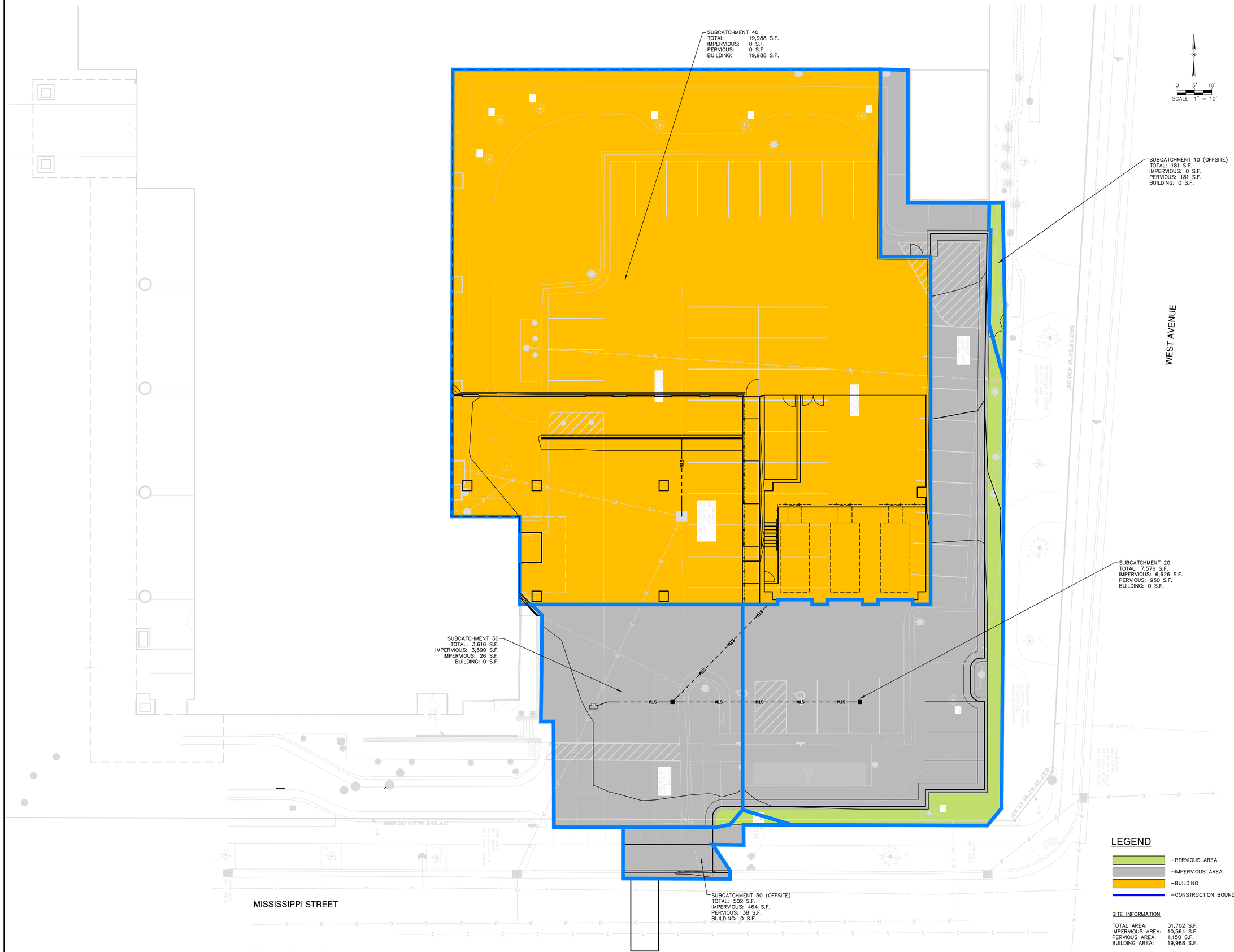
790 N Water St Suite 1700, Milwaukee, Wisconsin 53202
Telephone 414.272.2000 Fax 414.272.2001

104 Shockoe Slip, Richmond, Virginia 23219
Telephone 804.767.2500

722 Williamson Street, Madison, Wisconsin 53703
Telephone 608.283.6300 Fax 608.283.6317

150 N Wacker Drive, Suite 1700, Chicago, Illinois 60606
Telephone 312.789.4516

Sheet No.
E01



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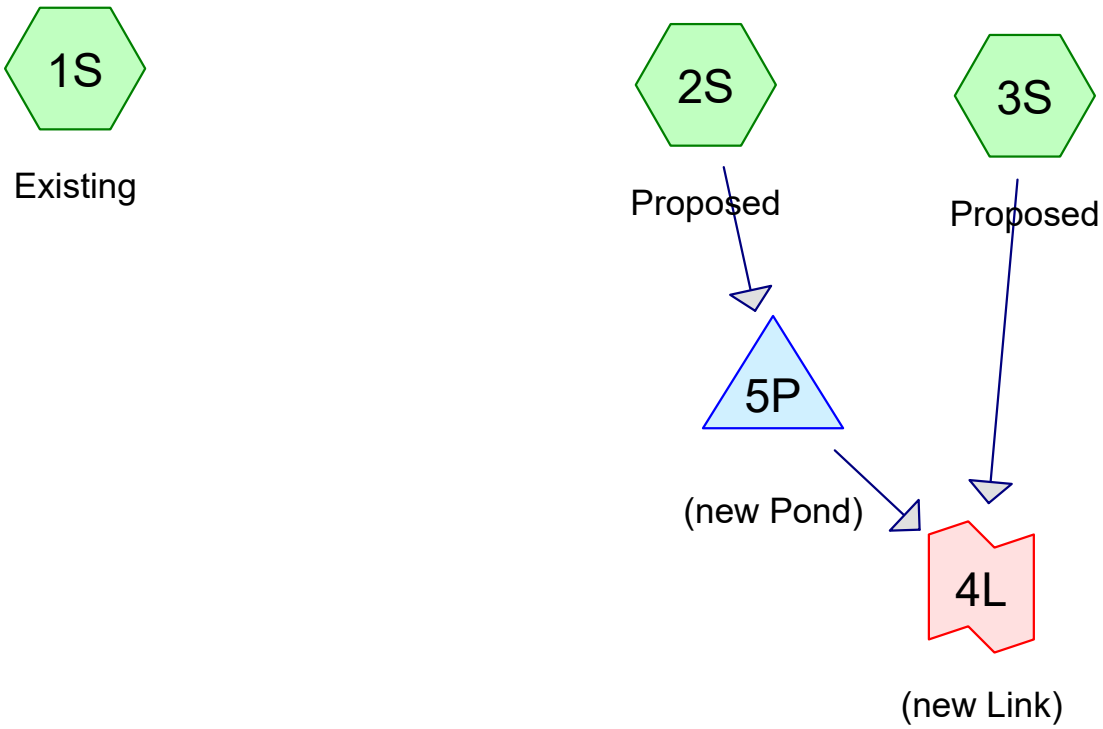
Telephone 608.283.6300 Fax 608.283.6317

150 N Wacker Drive, Suite 1700, Chicago, Illinois 60606
Telephone 312.789.4516

Sheet No.
P01



Subcat Reach Pond Link

Routing Diagram for Mayo
Prepared by Graef-USA, Printed 3/28/2025

Summary for Subcatchment 1S: Existing

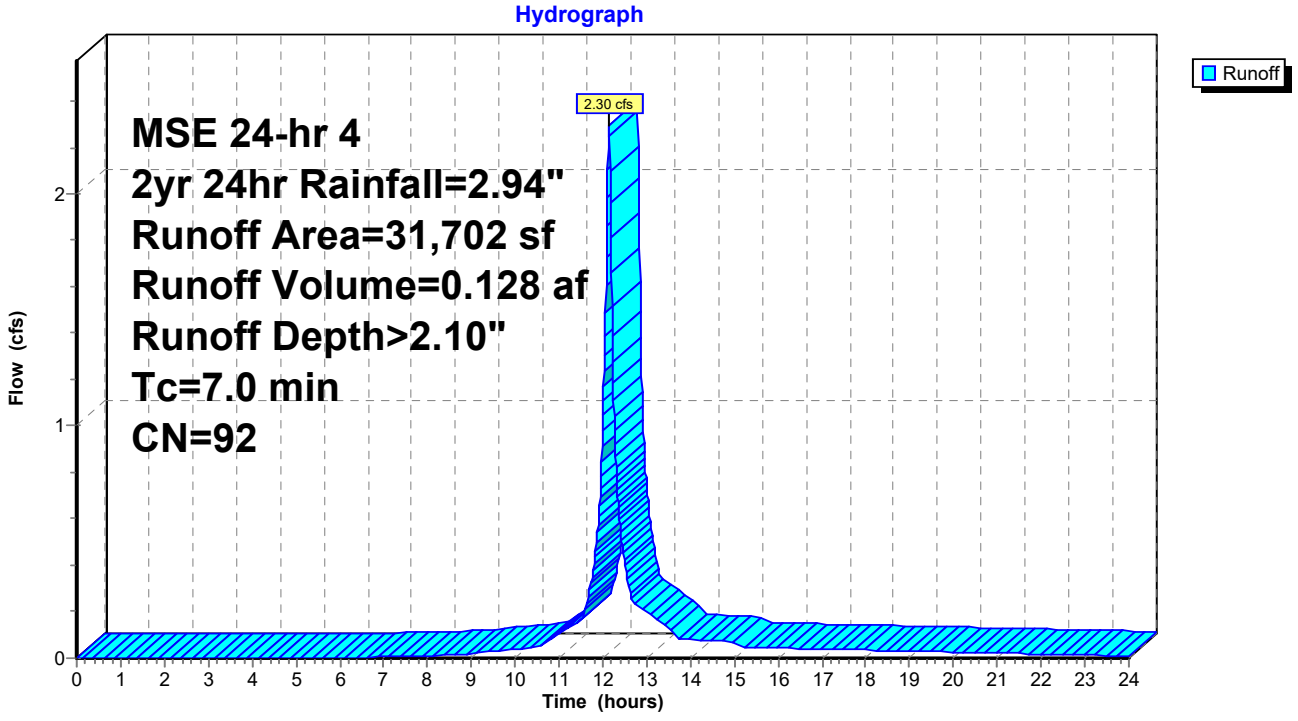
Runoff = 2.30 cfs @ 12.14 hrs, Volume= 0.128 af, Depth> 2.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.94"

	Area (sf)	CN	Description
*	22,174	98	Parking
*	9,320	78	Open Space / Grass
*	208	98	Building
	31,702	92	Weighted Average
	9,320		29.40% Pervious Area
	22,382		70.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry,**

Subcatchment 1S: Existing



Summary for Subcatchment 2S: Proposed

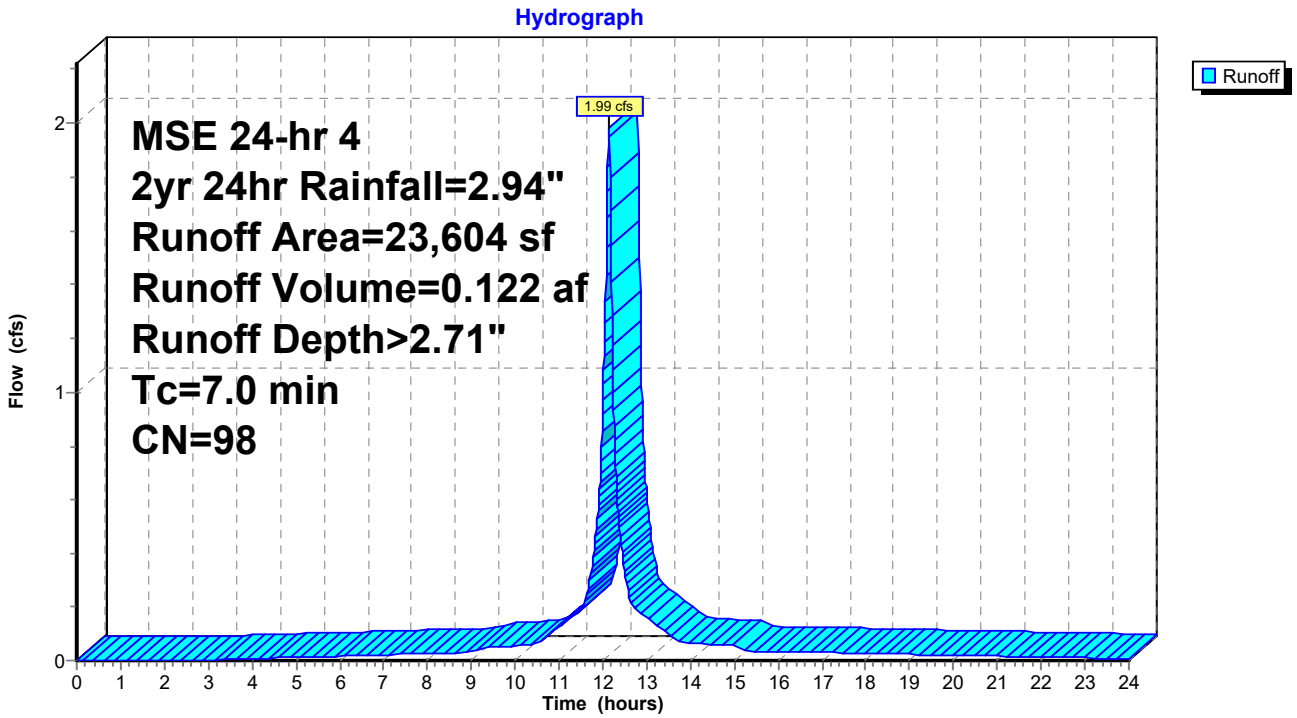
Runoff = 1.99 cfs @ 12.14 hrs, Volume= 0.122 af, Depth> 2.71"
Routed to Pond 5P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.94"

	Area (sf)	CN	Description
*	3,590	98	Parking
*	26	78	Open Space / Grass
*	19,988	98	Building
	23,604	98	Weighted Average
	26		0.11% Pervious Area
	23,578		99.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry,**

Subcatchment 2S: Proposed



Summary for Subcatchment 3S: Proposed

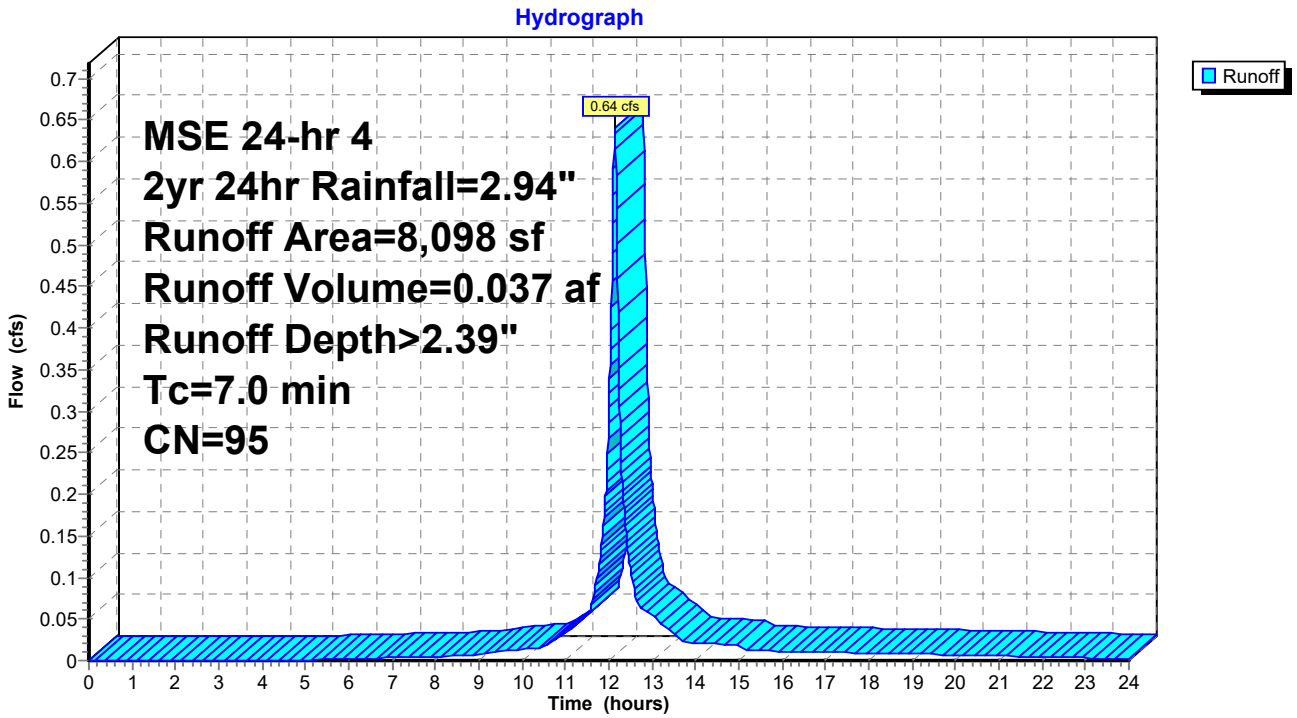
Runoff = 0.64 cfs @ 12.14 hrs, Volume= 0.037 af, Depth> 2.39"
Routed to Link 4L : (new Link)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.94"

	Area (sf)	CN	Description
*	6,974	98	Parking
*	1,124	78	Open Space / Grass
*	0	98	Building
	8,098	95	Weighted Average
	1,124		13.88% Pervious Area
	6,974		86.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry,**

Subcatchment 3S: Proposed



Summary for Pond 5P: (new Pond)

Inflow Area = 0.542 ac, 99.89% Impervious, Inflow Depth > 2.71" for 2yr 24hr event
Inflow = 1.99 cfs @ 12.14 hrs, Volume= 0.122 af
Outflow = 1.72 cfs @ 12.18 hrs, Volume= 0.122 af, Atten= 13%, Lag= 2.2 min
Primary = 1.72 cfs @ 12.18 hrs, Volume= 0.122 af
Routed to Link 4L : (new Link)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 664.63' @ 12.18 hrs Surf.Area= 0.005 ac Storage= 0.008 af

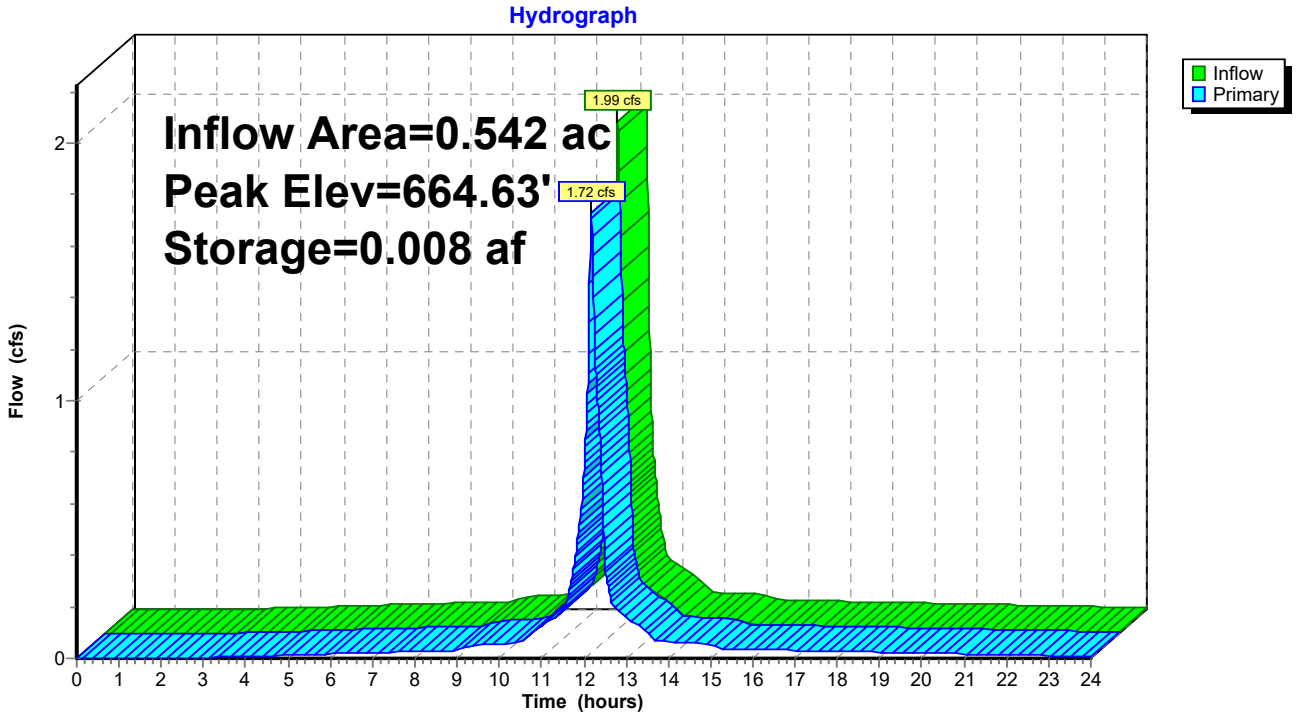
Plug-Flow detention time= 1.7 min calculated for 0.122 af (100% of inflow)
Center-of-Mass det. time= 1.5 min (757.6 - 756.1)

Volume	Invert	Avail.Storage	Storage Description
#1	662.66'	0.006 af	**30.0" Round Pipe Storage** L= 54.0' S= 0.0100 '/'
#2	662.63'	0.004 af	**30.0" Round Pipe Storage** L= 39.0' S= 0.0200 '/'
#3	662.45'	0.001 af	**4.00'D x 3.85'H Vertical Cone/Cylinder**
		0.012 af	Total Available Storage

Device	Routing	Invert	Outlet Devices		
#1	Primary	662.55'	**6.0" Vert. Orifice/Grate**	C= 0.600	Limited to weir flow at low heads
#2	Primary	664.20'	**6.6" Vert. Orifice/Grate**	C= 0.600	Limited to weir flow at low heads

Primary OutFlow Max=1.72 cfs @ 12.18 hrs HW=664.63' (Free Discharge)
1=Orifice/Grate (Orifice Controls 1.28 cfs @ 6.51 fps)
2=Orifice/Grate (Orifice Controls 0.44 cfs @ 2.23 fps)

Pond 5P: (new Pond)

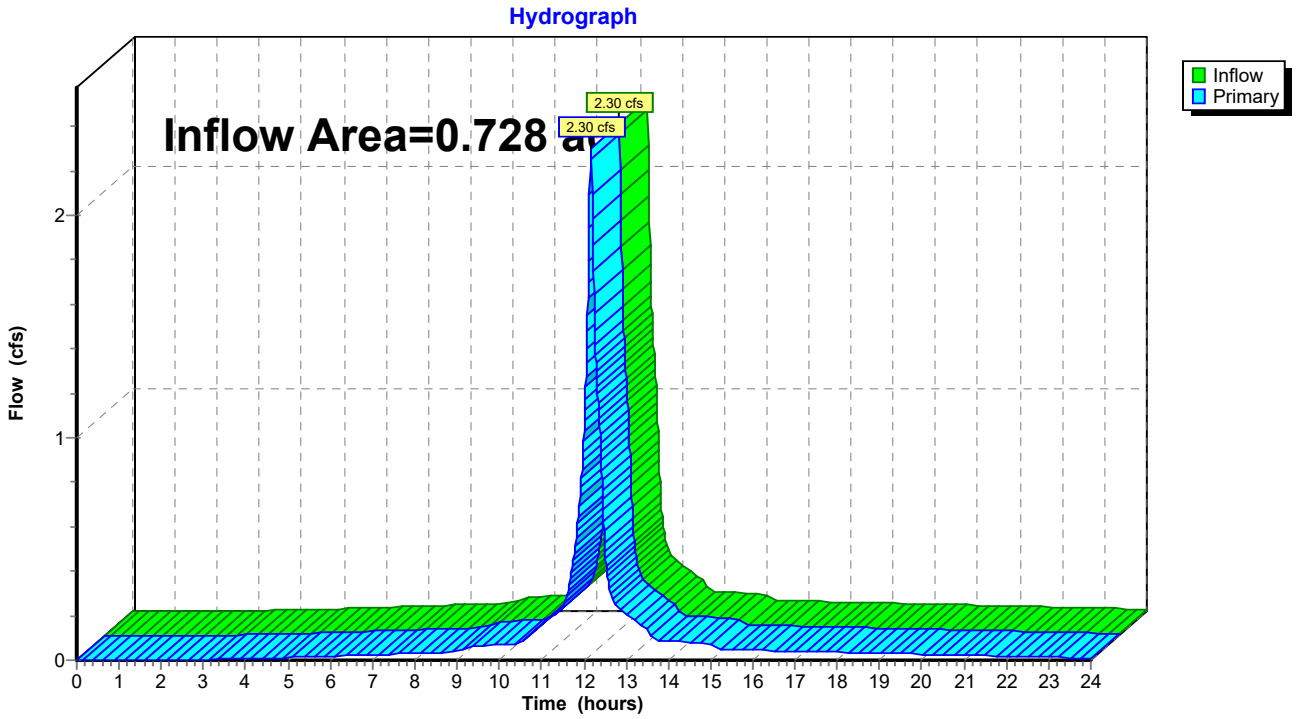


Summary for Link 4L: (new Link)

Inflow Area = 0.728 ac, 96.37% Impervious, Inflow Depth > 2.63" for 2yr 24hr event
Inflow = 2.30 cfs @ 12.17 hrs, Volume= 0.159 af
Primary = 2.30 cfs @ 12.17 hrs, Volume= 0.159 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 4L: (new Link)



Summary for Subcatchment 1S: Existing

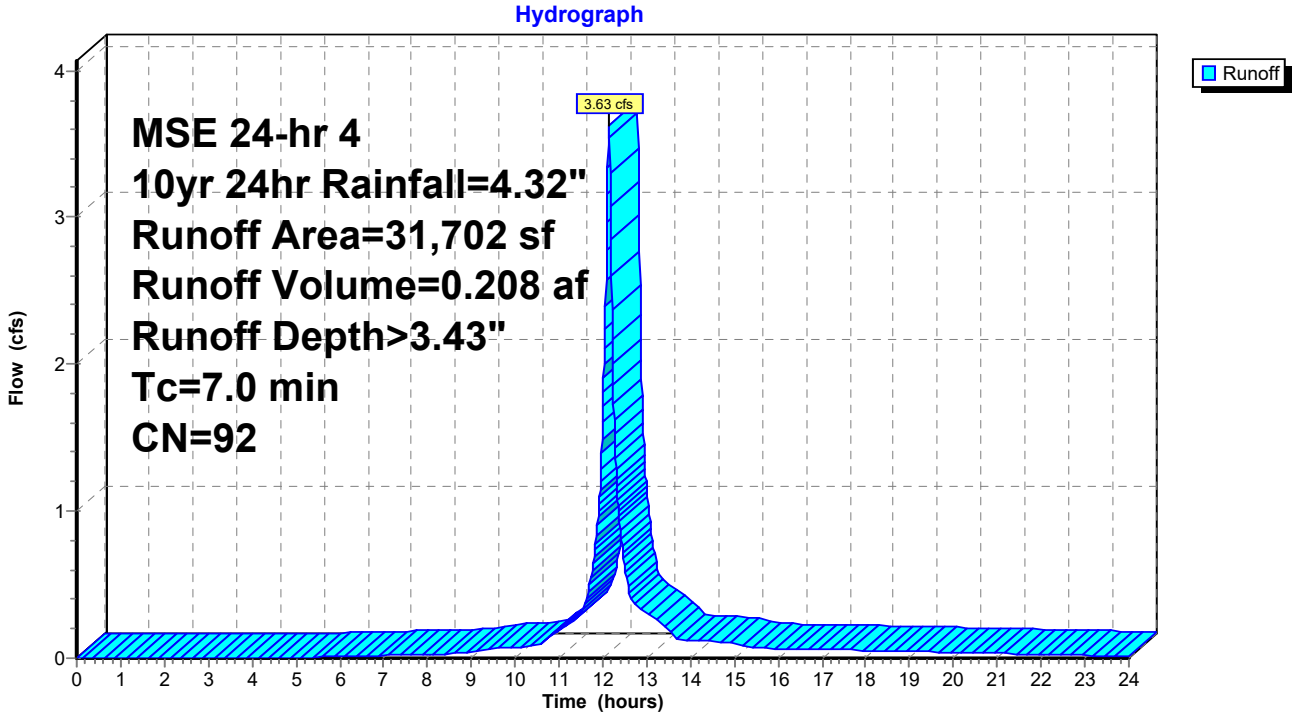
Runoff = 3.63 cfs @ 12.14 hrs, Volume= 0.208 af, Depth> 3.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.32"

	Area (sf)	CN	Description
*	22,174	98	Parking
*	9,320	78	Open Space / Grass
*	208	98	Building
	31,702	92	Weighted Average
	9,320		29.40% Pervious Area
	22,382		70.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry,**

Subcatchment 1S: Existing



Summary for Subcatchment 2S: Proposed

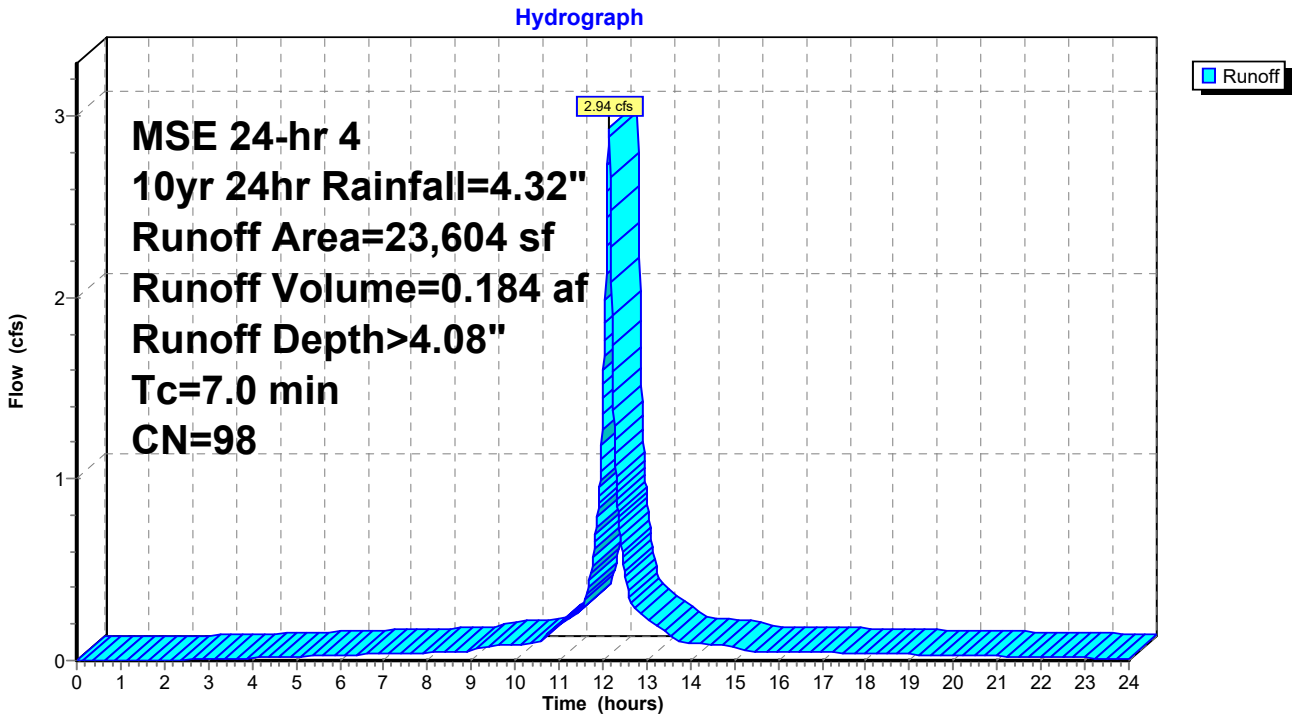
Runoff = 2.94 cfs @ 12.14 hrs, Volume= 0.184 af, Depth> 4.08"
Routed to Pond 5P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.32"

	Area (sf)	CN	Description
*	3,590	98	Parking
*	26	78	Open Space / Grass
*	19,988	98	Building
	23,604	98	Weighted Average
	26		0.11% Pervious Area
	23,578		99.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry,**

Subcatchment 2S: Proposed



Summary for Subcatchment 3S: Proposed

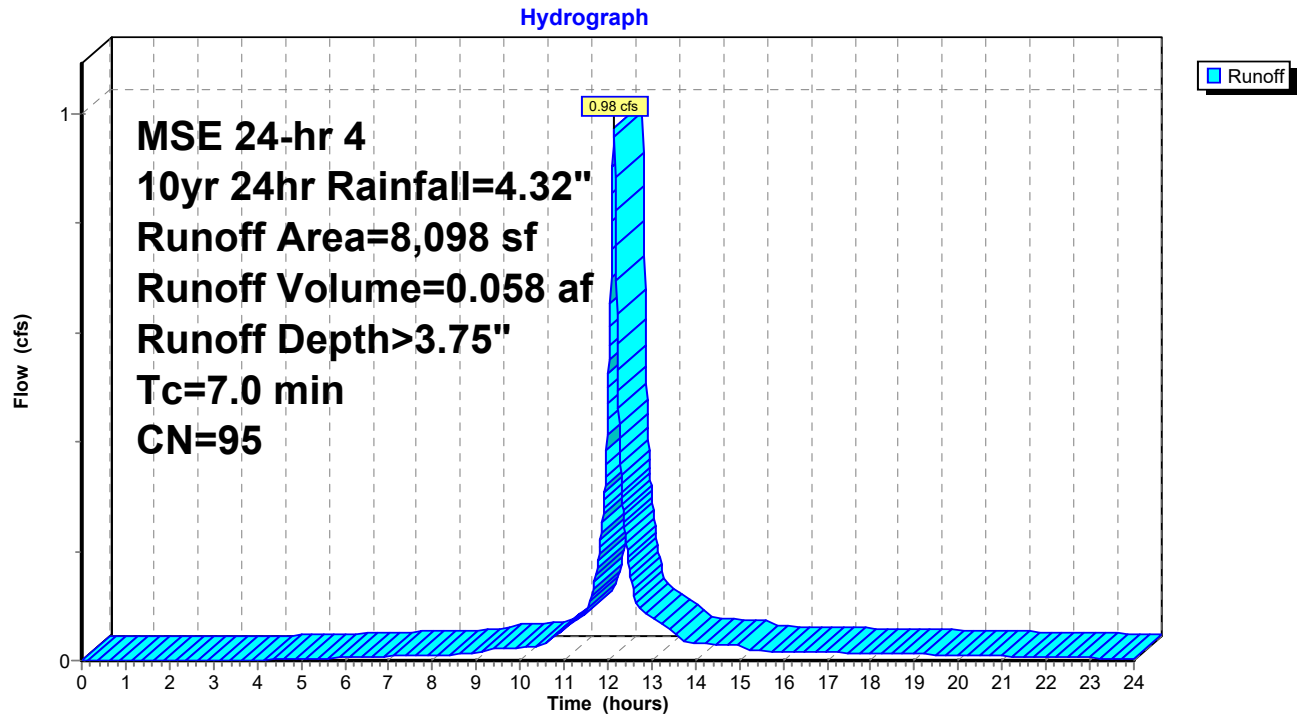
Runoff = 0.98 cfs @ 12.14 hrs, Volume= 0.058 af, Depth> 3.75"
Routed to Link 4L : (new Link)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.32"

	Area (sf)	CN	Description
*	6,974	98	Parking
*	1,124	78	Open Space / Grass
*	0	98	Building
	8,098	95	Weighted Average
	1,124		13.88% Pervious Area
	6,974		86.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					**Direct Entry,**

Subcatchment 3S: Proposed



Summary for Pond 5P: (new Pond)

Inflow Area = 0.542 ac, 99.89% Impervious, Inflow Depth > 4.08" for 10yr 24hr event
Inflow = 2.94 cfs @ 12.14 hrs, Volume= 0.184 af
Outflow = 2.71 cfs @ 12.17 hrs, Volume= 0.184 af, Atten= 8%, Lag= 1.7 min
Primary = 2.71 cfs @ 12.17 hrs, Volume= 0.184 af
Routed to Link 4L : (new Link)

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 665.50' @ 12.17 hrs Surf.Area= 0.001 ac Storage= 0.011 af

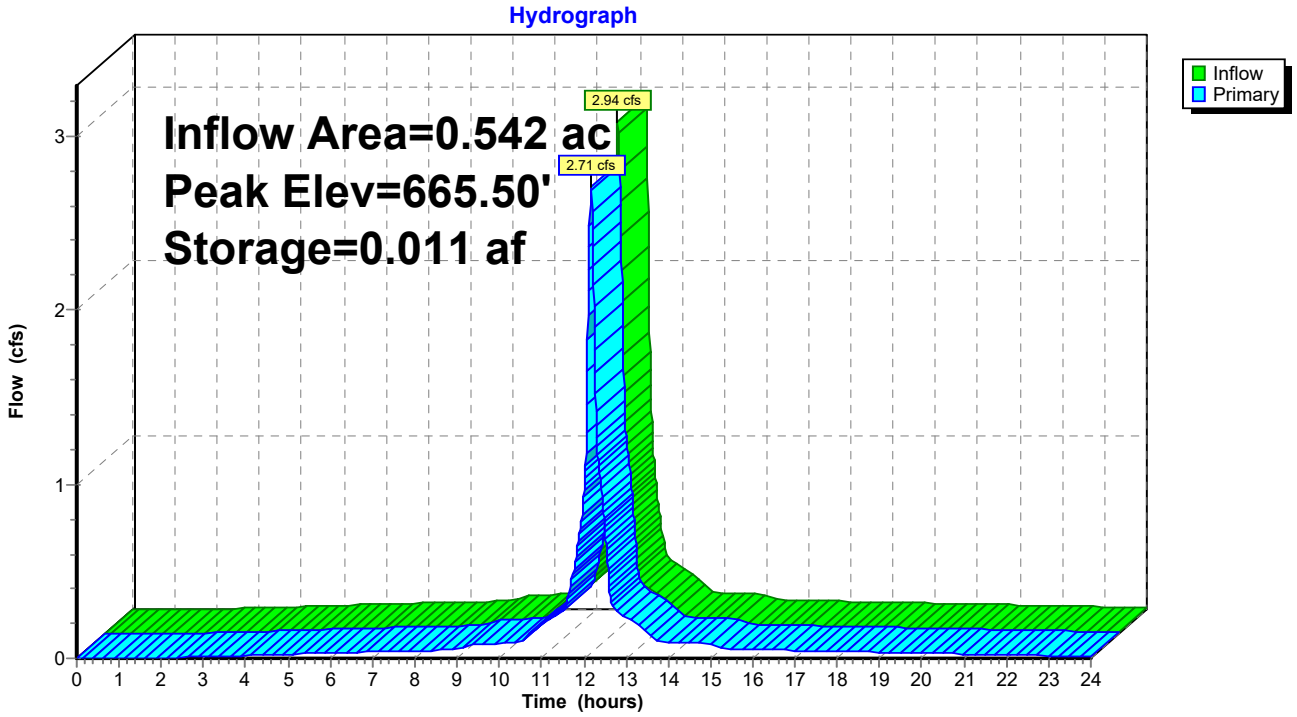
Plug-Flow detention time= 1.7 min calculated for 0.184 af (100% of inflow)
Center-of-Mass det. time= 1.6 min (750.9 - 749.3)

Volume	Invert	Avail.Storage	Storage Description
#1	662.66'	0.006 af	**30.0" Round Pipe Storage** L= 54.0' S= 0.0100 '/'
#2	662.63'	0.004 af	**30.0" Round Pipe Storage** L= 39.0' S= 0.0200 '/'
#3	662.45'	0.001 af	**4.00'D x 3.85'H Vertical Cone/Cylinder**
		0.012 af	Total Available Storage

Device	Routing	Invert	Outlet Devices		
#1	Primary	662.55'	**6.0" Vert. Orifice/Grate**	C= 0.600	Limited to weir flow at low heads
#2	Primary	664.20'	**6.6" Vert. Orifice/Grate**	C= 0.600	Limited to weir flow at low heads

Primary OutFlow Max=2.71 cfs @ 12.17 hrs HW=665.49' (Free Discharge)
1=Orifice/Grate (Orifice Controls 1.55 cfs @ 7.90 fps)
2=Orifice/Grate (Orifice Controls 1.15 cfs @ 4.86 fps)

Pond 5P: (new Pond)



Summary for Link 4L: (new Link)

Inflow Area = 0.728 ac, 96.37% Impervious, Inflow Depth > 4.00" for 10yr 24hr event
Inflow = 3.63 cfs @ 12.16 hrs, Volume= 0.242 af
Primary = 3.63 cfs @ 12.16 hrs, Volume= 0.242 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Link 4L: (new Link)