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INC.

ENGINEERS
SURVEYORS

SUPPLEMENTAL STORMWATER REPORT

For

“Village Townhouses”

434 Main Street
Wareham, MA

Prepared for

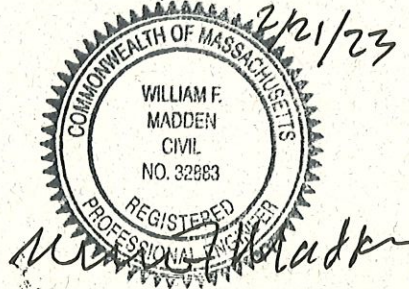
Nazih B. Elkallassi

20 Tower Terrace
Wareham, MA 02571

Prepared by

G.A.F. Engineering, Inc.

266 Main Street
Wareham, MA 02571



February 14, 2023

G.A.F. Job No.: 21-9751

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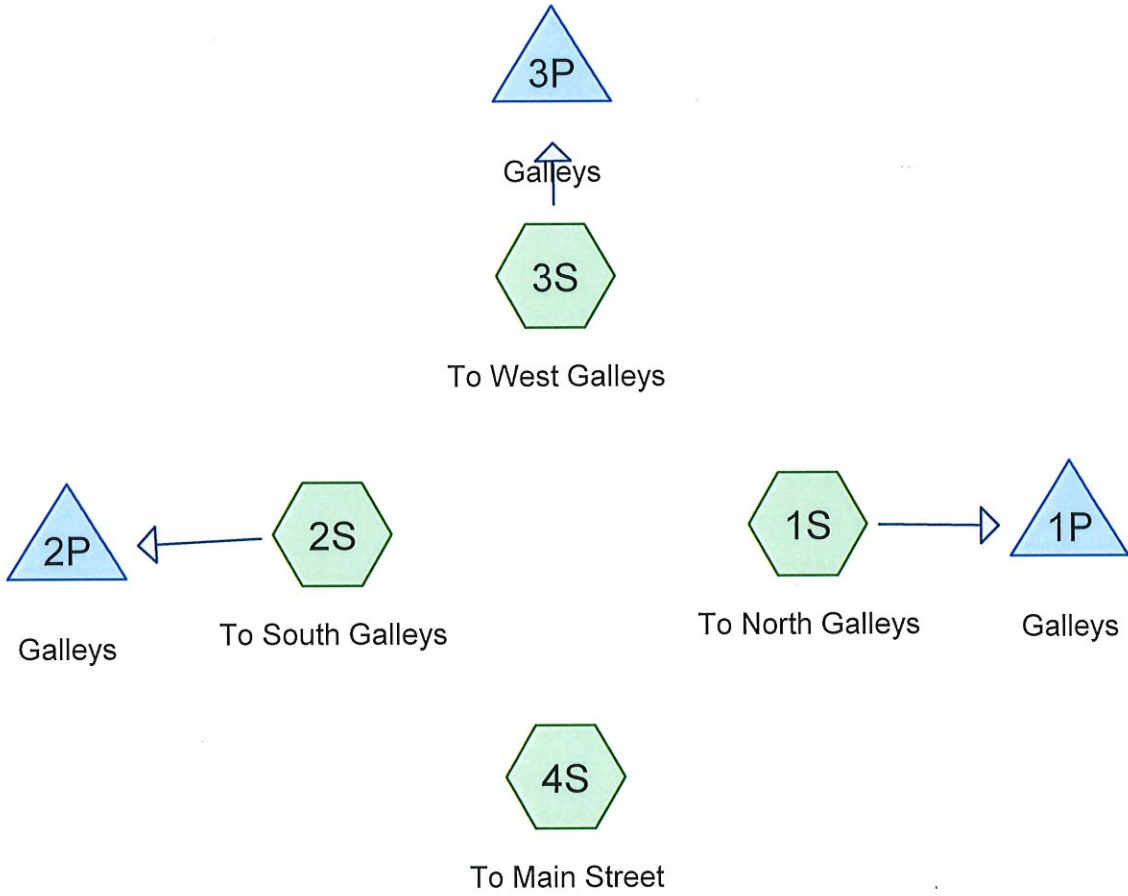
- Summary of Revisions.....
- Post-Development Runoff Calculations.....
- Water Quality Volume Calculations.....
- Recharge Volume Calculations.....
- Watershed Maps.....

SUMMARY OF REVISIONS

This project was filed seeking approval for a single building with nine residential units. Due to a number of considerations the applicant/owner has revised the architectural style of the project and currently proposes to construct four two family dwellings which results in a reduction of one unit and corresponding decrease in impervious surfaces.

This supplemental report contains the sections of drainage analysis which are impacted by the new lot coverage calculations. The site grading and drainage design for the project remains the same. New post-development drainage calculations were performed and utilized to update the required water quality and recharge volumes. An updated post-development watershed map is provided.

The calculations show that the revised project reduces the peak storm flow rates and volumes to Main Street, protects the adjacent properties, and complies with the Massachusetts Stormwater Handbook and Town of Wareham stormwater management requirements.



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Project Notes

Rainfall events imported from "9751PRE.hcp"

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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 Year Storm	Type III 24-hr		Default	24.00	1	3.44	2
2	10 Year Storm	Type III 24-hr		Default	24.00	1	5.05	2
3	25 Year Storm	Type III 24-hr		Default	24.00	1	6.05	2
4	100 Year Storm	Type III 24-hr		Default	24.00	1	7.59	2

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.615	39	>75% Grass cover, Good, HSG A (1S, 2S, 3S, 4S)
0.014	98	Pavement (4S)
0.279	98	Pavement and Roofs (1S, 2S)
0.102	98	Roofs, porches, decks (3S)
1.010	62	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.615	HSG A	1S, 2S, 3S, 4S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.395	Other	1S, 2S, 3S, 4S
1.010		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.615	0.000	0.000	0.000	0.000	0.615	>75% Grass cover, Good	1S, 2S, 3S, 4S
0.000	0.000	0.000	0.000	0.014	0.014	Pavement	4S
0.000	0.000	0.000	0.000	0.279	0.279	Pavement and Roofs	1S, 2S
0.000	0.000	0.000	0.000	0.102	0.102	Roofs, porches, decks	3S
0.615	0.000	0.000	0.000	0.395	1.010	TOTAL AREA	

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Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: To North Galleys	Runoff Area=9,455 sf 64.77% Impervious Runoff Depth=1.39" Tc=6.0 min CN=77 Runoff=0.34 cfs 0.025 af
Subcatchment 2S: To South Galleys	Runoff Area=10,145 sf 59.31% Impervious Runoff Depth=1.20" Tc=6.0 min CN=74 Runoff=0.31 cfs 0.023 af
Subcatchment 3S: To West Galleys	Runoff Area=22,800 sf 19.58% Impervious Runoff Depth=0.21" Tc=6.0 min CN=51 Runoff=0.04 cfs 0.009 af
Subcatchment 4S: To Main Street	Runoff Area=1,600 sf 37.50% Impervious Runoff Depth=0.55" Tc=6.0 min CN=61 Runoff=0.02 cfs 0.002 af
Pond 1P: Galleys	Peak Elev=23.06' Storage=143 cf Inflow=0.34 cfs 0.025 af Outflow=0.14 cfs 0.025 af
Pond 2P: Galleys	Peak Elev=22.91' Storage=111 cf Inflow=0.31 cfs 0.023 af Outflow=0.14 cfs 0.023 af
Pond 3P: Galleys	Peak Elev=22.81' Storage=3 cf Inflow=0.04 cfs 0.009 af Outflow=0.04 cfs 0.009 af

Total Runoff Area = 1.010 ac Runoff Volume = 0.059 af Average Runoff Depth = 0.70"
60.90% Pervious = 0.615 ac 39.10% Impervious = 0.395 ac

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Summary for Subcatchment 1S: To North Galleys

Runoff = 0.34 cfs @ 12.10 hrs, Volume= 0.025 af, Depth= 1.39"
 Routed to Pond 1P : Galleys

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2 Year Storm Rainfall=3.44"

	Area (sf)	CN	Description
*	6,124	98	Pavement and Roofs
	3,331	39	>75% Grass cover, Good, HSG A
	9,455	77	Weighted Average
	3,331		35.23% Pervious Area
	6,124		64.77% Impervious Area

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

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Summary for Subcatchment 2S: To South Galleys

Runoff = 0.31 cfs @ 12.10 hrs, Volume= 0.023 af, Depth= 1.20"
 Routed to Pond 2P : Galleys

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2 Year Storm Rainfall=3.44"

	Area (sf)	CN	Description
*	6,017	98	Pavement and Roofs
	4,128	39	>75% Grass cover, Good, HSG A
	10,145	74	Weighted Average
	4,128		40.69% Pervious Area
	6,017		59.31% Impervious Area

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

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Summary for Subcatchment 3S: To West Galleys

Runoff = 0.04 cfs @ 12.39 hrs, Volume= 0.009 af, Depth= 0.21"
 Routed to Pond 3P : Galleys

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2 Year Storm Rainfall=3.44"

	Area (sf)	CN	Description
*	4,464	98	Roofs, porches, decks
	18,336	39	>75% Grass cover, Good, HSG A
	22,800	51	Weighted Average
	18,336		80.42% Pervious Area
	4,464		19.58% Impervious Area

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

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Type III 24-hr 2 Year Storm Rainfall=3.44"

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Summary for Subcatchment 4S: To Main Street

Runoff = 0.02 cfs @ 12.12 hrs, Volume= 0.002 af, Depth= 0.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 Year Storm Rainfall=3.44"

Area (sf)	CN	Description
* 600	98	Pavement
1,000	39	>75% Grass cover, Good, HSG A
1,600	61	Weighted Average
1,000		62.50% Pervious Area
600		37.50% Impervious Area

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

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Summary for Pond 1P: Galleys

Inflow Area = 0.217 ac, 64.77% Impervious, Inflow Depth = 1.39" for 2 Year Storm event
 Inflow = 0.34 cfs @ 12.10 hrs, Volume= 0.025 af
 Outflow = 0.14 cfs @ 12.36 hrs, Volume= 0.025 af, Atten= 58%, Lag= 15.9 min
 Discarded = 0.14 cfs @ 12.36 hrs, Volume= 0.025 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 23.06' @ 12.36 hrs Surf.Area= 640 sf Storage= 143 cf

Plug-Flow detention time= 6.5 min calculated for 0.025 af (100% of inflow)
 Center-of-Mass det. time= 5.8 min (854.2 - 848.4)

Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	823 cf	8.00'W x 80.00'L x 4.50'H Crushed Stone 2,880 cf Overall - 821 cf Embedded = 2,059 cf x 40.0% Voids
#2	23.50'	593 cf	Concrete Galley 4x4x3 x 19 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf
		1,416 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.50'	8.270 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.14 cfs @ 12.36 hrs HW=23.06' (Free Discharge)
 ↳1=Exfiltration (Exfiltration Controls 0.14 cfs)

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Summary for Pond 2P: Galleys

Inflow Area = 0.233 ac, 59.31% Impervious, Inflow Depth = 1.20" for 2 Year Storm event
 Inflow = 0.31 cfs @ 12.10 hrs, Volume= 0.023 af
 Outflow = 0.14 cfs @ 12.33 hrs, Volume= 0.023 af, Atten= 54%, Lag= 14.1 min
 Discarded = 0.14 cfs @ 12.33 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 22.91' @ 12.33 hrs Surf.Area= 672 sf Storage= 111 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 4.4 min (862.0 - 857.6)

Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	864 cf	8.00'W x 84.00'L x 4.50'H Crushed Stone 3,024 cf Overall - 865 cf Embedded = 2,159 cf x 40.0% Voids
#2	23.50'	624 cf	Concrete Galley 4x4x3 x 20 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf
		1,488 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.50'	8.270 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.14 cfs @ 12.33 hrs HW=22.91' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

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Summary for Pond 3P: Galleys

Inflow Area = 0.523 ac, 19.58% Impervious, Inflow Depth = 0.21" for 2 Year Storm event
 Inflow = 0.04 cfs @ 12.39 hrs, Volume= 0.009 af
 Outflow = 0.04 cfs @ 12.42 hrs, Volume= 0.009 af, Atten= 1%, Lag= 1.6 min
 Discarded = 0.04 cfs @ 12.42 hrs, Volume= 0.009 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 22.81' @ 12.42 hrs Surf.Area= 768 sf Storage= 3 cf

Plug-Flow detention time= 1.5 min calculated for 0.009 af (100% of inflow)
 Center-of-Mass det. time= 1.5 min (977.6 - 976.0)

Volume	Invert	Avail.Storage	Storage Description
#1	22.80'	1,348 cf	8.00'W x 12.00'L x 4.50'H Crushed Stone x 8 3,456 cf Overall - 86 cf Embedded = 3,370 cf x 40.0% Voids
#2	23.80'	62 cf	Concrete Galley 4x4x3 x 2 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf 2 Chambers in 8 Rows
		1,410 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.80'	8.270 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.15 cfs @ 12.42 hrs HW=22.81' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.15 cfs)

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Type III 24-hr 10 Year Storm Rainfall=5.05"

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Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: To North Galleys	Runoff Area=9,455 sf 64.77% Impervious Runoff Depth=2.66" Tc=6.0 min CN=77 Runoff=0.66 cfs 0.048 af
Subcatchment 2S: To South Galleys	Runoff Area=10,145 sf 59.31% Impervious Runoff Depth=2.40" Tc=6.0 min CN=74 Runoff=0.64 cfs 0.047 af
Subcatchment 3S: To West Galleys	Runoff Area=22,800 sf 19.58% Impervious Runoff Depth=0.77" Tc=6.0 min CN=51 Runoff=0.32 cfs 0.034 af
Subcatchment 4S: To Main Street	Runoff Area=1,600 sf 37.50% Impervious Runoff Depth=1.40" Tc=6.0 min CN=61 Runoff=0.05 cfs 0.004 af
Pond 1P: Galleys	Peak Elev=24.10' Storage=486 cf Inflow=0.66 cfs 0.048 af Outflow=0.18 cfs 0.048 af
Pond 2P: Galleys	Peak Elev=23.93' Storage=444 cf Inflow=0.64 cfs 0.047 af Outflow=0.18 cfs 0.047 af
Pond 3P: Galleys	Peak Elev=23.18' Storage=118 cf Inflow=0.32 cfs 0.034 af Outflow=0.17 cfs 0.034 af

Total Runoff Area = 1.010 ac Runoff Volume = 0.133 af Average Runoff Depth = 1.58"
60.90% Pervious = 0.615 ac 39.10% Impervious = 0.395 ac

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Summary for Subcatchment 1S: To North Galleys

Runoff = 0.66 cfs @ 12.09 hrs, Volume= 0.048 af, Depth= 2.66"
 Routed to Pond 1P : Galleys

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10 Year Storm Rainfall=5.05"

	Area (sf)	CN	Description
*	6,124	98	Pavement and Roofs
	3,331	39	>75% Grass cover, Good, HSG A
	9,455	77	Weighted Average
	3,331		35.23% Pervious Area
	6,124		64.77% Impervious Area

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

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Summary for Subcatchment 2S: To South Galleys

Runoff = 0.64 cfs @ 12.09 hrs, Volume= 0.047 af, Depth= 2.40"
 Routed to Pond 2P : Galleys

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10 Year Storm Rainfall=5.05"

	Area (sf)	CN	Description
*	6,017	98	Pavement and Roofs
	4,128	39	>75% Grass cover, Good, HSG A
	10,145	74	Weighted Average
	4,128		40.69% Pervious Area
	6,017		59.31% Impervious Area

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

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Summary for Subcatchment 3S: To West Galleys

Runoff = 0.32 cfs @ 12.12 hrs, Volume= 0.034 af, Depth= 0.77"
 Routed to Pond 3P : Galleys

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10 Year Storm Rainfall=5.05"

	Area (sf)	CN	Description
*	4,464	98	Roofs, porches, decks
	18,336	39	>75% Grass cover, Good, HSG A
	22,800	51	Weighted Average
	18,336		80.42% Pervious Area
	4,464		19.58% Impervious Area

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

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Type III 24-hr 10 Year Storm Rainfall=5.05"

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Summary for Subcatchment 4S: To Main Street

Runoff = 0.05 cfs @ 12.10 hrs, Volume= 0.004 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 Year Storm Rainfall=5.05"

	Area (sf)	CN	Description
*	600	98	Pavement
	1,000	39	>75% Grass cover, Good, HSG A
	1,600	61	Weighted Average
	1,000		62.50% Pervious Area
	600		37.50% Impervious Area

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

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Summary for Pond 1P: Galleys

Inflow Area = 0.217 ac, 64.77% Impervious, Inflow Depth = 2.66" for 10 Year Storm event
 Inflow = 0.66 cfs @ 12.09 hrs, Volume= 0.048 af
 Outflow = 0.18 cfs @ 12.48 hrs, Volume= 0.048 af, Atten= 73%, Lag= 23.3 min
 Discarded = 0.18 cfs @ 12.48 hrs, Volume= 0.048 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 24.10' @ 12.48 hrs Surf.Area= 640 sf Storage= 486 cf

Plug-Flow detention time= 17.7 min calculated for 0.048 af (100% of inflow)
 Center-of-Mass det. time= 17.3 min (846.6 - 829.3)

Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	823 cf	8.00'W x 80.00'L x 4.50'H Crushed Stone 2,880 cf Overall - 821 cf Embedded = 2,059 cf x 40.0% Voids
#2	23.50'	593 cf	Concrete Galley 4x4x3 x 19 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf
		1,416 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.50'	8.270 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.18 cfs @ 12.48 hrs HW=24.09' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.18 cfs)

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Summary for Pond 2P: Galleys

Inflow Area = 0.233 ac, 59.31% Impervious, Inflow Depth = 2.40" for 10 Year Storm event
 Inflow = 0.64 cfs @ 12.09 hrs, Volume= 0.047 af
 Outflow = 0.18 cfs @ 12.48 hrs, Volume= 0.047 af, Atten= 72%, Lag= 22.9 min
 Discarded = 0.18 cfs @ 12.48 hrs, Volume= 0.047 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 23.93' @ 12.48 hrs Surf.Area= 672 sf Storage= 444 cf

Plug-Flow detention time= 15.5 min calculated for 0.047 af (100% of inflow)
 Center-of-Mass det. time= 15.3 min (852.2 - 836.9)

Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	864 cf	8.00'W x 84.00'L x 4.50'H Crushed Stone 3,024 cf Overall - 865 cf Embedded = 2,159 cf x 40.0% Voids
#2	23.50'	624 cf	Concrete Galley 4x4x3 x 20 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf
		1,488 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.50'	8.270 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.18 cfs @ 12.48 hrs HW=23.93' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.18 cfs)

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Summary for Pond 3P: Galleys

Inflow Area = 0.523 ac, 19.58% Impervious, Inflow Depth = 0.77" for 10 Year Storm event
 Inflow = 0.32 cfs @ 12.12 hrs, Volume= 0.034 af
 Outflow = 0.17 cfs @ 12.43 hrs, Volume= 0.034 af, Atten= 46%, Lag= 18.6 min
 Discarded = 0.17 cfs @ 12.43 hrs, Volume= 0.034 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 23.18' @ 12.43 hrs Surf.Area= 768 sf Storage= 118 cf

Plug-Flow detention time= 3.4 min calculated for 0.033 af (100% of inflow)
 Center-of-Mass det. time= 3.6 min (912.3 - 908.7)

Volume	Invert	Avail.Storage	Storage Description
#1	22.80'	1,348 cf	8.00'W x 12.00'L x 4.50'H Crushed Stone x 8 3,456 cf Overall - 86 cf Embedded = 3,370 cf x 40.0% Voids
#2	23.80'	62 cf	Concrete Galley 4x4x3 x 2 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf 2 Chambers in 8 Rows
		1,410 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.80'	8.270 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.17 cfs @ 12.43 hrs HW=23.18' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.17 cfs)

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Village Townhouses 434 Main St. Wareham
Type III 24-hr 25 Year Storm Rainfall=6.05"

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Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: To North Galleys	Runoff Area=9,455 sf 64.77% Impervious Runoff Depth=3.52" Tc=6.0 min CN=77 Runoff=0.88 cfs 0.064 af
Subcatchment 2S: To South Galleys	Runoff Area=10,145 sf 59.31% Impervious Runoff Depth=3.23" Tc=6.0 min CN=74 Runoff=0.86 cfs 0.063 af
Subcatchment 3S: To West Galleys	Runoff Area=22,800 sf 19.58% Impervious Runoff Depth=1.24" Tc=6.0 min CN=51 Runoff=0.62 cfs 0.054 af
Subcatchment 4S: To Main Street	Runoff Area=1,600 sf 37.50% Impervious Runoff Depth=2.04" Tc=6.0 min CN=61 Runoff=0.08 cfs 0.006 af
Pond 1P: Galleys	Peak Elev=24.77' Storage=744 cf Inflow=0.88 cfs 0.064 af Outflow=0.20 cfs 0.064 af
Pond 2P: Galleys	Peak Elev=24.59' Storage=709 cf Inflow=0.86 cfs 0.063 af Outflow=0.20 cfs 0.063 af
Pond 3P: Galleys	Peak Elev=24.03' Storage=380 cf Inflow=0.62 cfs 0.054 af Outflow=0.22 cfs 0.054 af

Total Runoff Area = 1.010 ac Runoff Volume = 0.187 af Average Runoff Depth = 2.22"
60.90% Pervious = 0.615 ac 39.10% Impervious = 0.395 ac

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Summary for Subcatchment 1S: To North Galleys

Runoff = 0.88 cfs @ 12.09 hrs, Volume= 0.064 af, Depth= 3.52"
 Routed to Pond 1P : Galleys

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25 Year Storm Rainfall=6.05"

	Area (sf)	CN	Description
*	6,124	98	Pavement and Roofs
	3,331	39	>75% Grass cover, Good, HSG A
	9,455	77	Weighted Average
	3,331		35.23% Pervious Area
	6,124		64.77% Impervious Area

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

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Summary for Subcatchment 2S: To South Galleys

Runoff = 0.86 cfs @ 12.09 hrs, Volume= 0.063 af, Depth= 3.23"
 Routed to Pond 2P : Galleys

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25 Year Storm Rainfall=6.05"

	Area (sf)	CN	Description
*	6,017	98	Pavement and Roofs
	4,128	39	>75% Grass cover, Good, HSG A
	10,145	74	Weighted Average
	4,128		40.69% Pervious Area
	6,017		59.31% Impervious Area

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

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Summary for Subcatchment 3S: To West Galleys

Runoff = 0.62 cfs @ 12.11 hrs, Volume= 0.054 af, Depth= 1.24"
 Routed to Pond 3P : Galleys

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25 Year Storm Rainfall=6.05"

	Area (sf)	CN	Description
*	4,464	98	Roofs, porches, decks
	18,336	39	>75% Grass cover, Good, HSG A
	22,800	51	Weighted Average
	18,336		80.42% Pervious Area
	4,464		19.58% Impervious Area

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

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Summary for Subcatchment 4S: To Main Street

Runoff = 0.08 cfs @ 12.10 hrs, Volume= 0.006 af, Depth= 2.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25 Year Storm Rainfall=6.05"

Area (sf)	CN	Description
* 600	98	Pavement
1,000	39	>75% Grass cover, Good, HSG A
1,600	61	Weighted Average
1,000		62.50% Pervious Area
600		37.50% Impervious Area

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

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Summary for Pond 1P: Galleys

Inflow Area = 0.217 ac, 64.77% Impervious, Inflow Depth = 3.52" for 25 Year Storm event
 Inflow = 0.88 cfs @ 12.09 hrs, Volume= 0.064 af
 Outflow = 0.20 cfs @ 12.51 hrs, Volume= 0.064 af, Atten= 77%, Lag= 25.3 min
 Discarded = 0.20 cfs @ 12.51 hrs, Volume= 0.064 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 24.77' @ 12.51 hrs Surf.Area= 640 sf Storage= 744 cf

Plug-Flow detention time= 25.8 min calculated for 0.064 af (100% of inflow)
 Center-of-Mass det. time= 25.7 min (846.9 - 821.2)

Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	823 cf	8.00'W x 80.00'L x 4.50'H Crushed Stone 2,880 cf Overall - 821 cf Embedded = 2,059 cf x 40.0% Voids
#2	23.50'	593 cf	Concrete Galley 4x4x3 x 19 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf
		1,416 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.50'	8.270 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.20 cfs @ 12.51 hrs HW=24.76' (Free Discharge)
 ↑=Exfiltration (Exfiltration Controls 0.20 cfs)

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Summary for Pond 2P: Galleys

Inflow Area = 0.233 ac, 59.31% Impervious, Inflow Depth = 3.23" for 25 Year Storm event
 Inflow = 0.86 cfs @ 12.09 hrs, Volume= 0.063 af
 Outflow = 0.20 cfs @ 12.51 hrs, Volume= 0.063 af, Atten= 77%, Lag= 25.1 min
 Discarded = 0.20 cfs @ 12.51 hrs, Volume= 0.063 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 24.59' @ 12.51 hrs Surf.Area= 672 sf Storage= 709 cf

Plug-Flow detention time= 23.8 min calculated for 0.063 af (100% of inflow)
 Center-of-Mass det. time= 23.8 min (852.2 - 828.4)

Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	864 cf	8.00'W x 84.00'L x 4.50'H Crushed Stone 3,024 cf Overall - 865 cf Embedded = 2,159 cf x 40.0% Voids
#2	23.50'	624 cf	Concrete Galley 4x4x3 x 20 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf
		1,488 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.50'	8.270 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.20 cfs @ 12.51 hrs HW=24.59' (Free Discharge)
 ↑-1=Exfiltration (Exfiltration Controls 0.20 cfs)

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Summary for Pond 3P: Galleys

Inflow Area = 0.523 ac, 19.58% Impervious, Inflow Depth = 1.24" for 25 Year Storm event
 Inflow = 0.62 cfs @ 12.11 hrs, Volume= 0.054 af
 Outflow = 0.22 cfs @ 12.49 hrs, Volume= 0.054 af, Atten= 64%, Lag= 23.1 min
 Discarded = 0.22 cfs @ 12.49 hrs, Volume= 0.054 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 24.03' @ 12.49 hrs Surf.Area= 768 sf Storage= 380 cf

Plug-Flow detention time= 10.5 min calculated for 0.054 af (100% of inflow)
 Center-of-Mass det. time= 10.3 min (900.1 - 889.9)

Volume	Invert	Avail.Storage	Storage Description
#1	22.80'	1,348 cf	8.00'W x 12.00'L x 4.50'H Crushed Stone x 8 3,456 cf Overall - 86 cf Embedded = 3,370 cf x 40.0% Voids
#2	23.80'	62 cf	Concrete Galley 4x4x3 x 2 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf 2 Chambers in 8 Rows
		1,410 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.80'	8.270 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.22 cfs @ 12.49 hrs HW=24.02' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.22 cfs)

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Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: To North Galleys	Runoff Area=9,455 sf 64.77% Impervious Runoff Depth=4.90" Tc=6.0 min CN=77 Runoff=1.21 cfs 0.089 af
Subcatchment 2S: To South Galleys	Runoff Area=10,145 sf 59.31% Impervious Runoff Depth=4.56" Tc=6.0 min CN=74 Runoff=1.22 cfs 0.089 af
Subcatchment 3S: To West Galleys	Runoff Area=22,800 sf 19.58% Impervious Runoff Depth=2.10" Tc=6.0 min CN=51 Runoff=1.16 cfs 0.092 af
Subcatchment 4S: To Main Street	Runoff Area=1,600 sf 37.50% Impervious Runoff Depth=3.14" Tc=6.0 min CN=61 Runoff=0.13 cfs 0.010 af
Pond 1P: Galleys	Peak Elev=25.88' Storage=1,167 cf Inflow=1.21 cfs 0.089 af Outflow=0.24 cfs 0.089 af
Pond 2P: Galleys	Peak Elev=25.69' Storage=1,152 cf Inflow=1.22 cfs 0.089 af Outflow=0.24 cfs 0.088 af
Pond 3P: Galleys	Peak Elev=25.70' Storage=916 cf Inflow=1.16 cfs 0.092 af Outflow=0.32 cfs 0.092 af

Total Runoff Area = 1.010 ac Runoff Volume = 0.278 af Average Runoff Depth = 3.31"
60.90% Pervious = 0.615 ac 39.10% Impervious = 0.395 ac

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Summary for Subcatchment 1S: To North Galleys

Runoff = 1.21 cfs @ 12.09 hrs, Volume= 0.089 af, Depth= 4.90"
 Routed to Pond 1P : Galleys

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100 Year Storm Rainfall=7.59"

	Area (sf)	CN	Description
*	6,124	98	Pavement and Roofs
	3,331	39	>75% Grass cover, Good, HSG A
	9,455	77	Weighted Average
	3,331		35.23% Pervious Area
	6,124		64.77% Impervious Area

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

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Summary for Subcatchment 2S: To South Galleys

Runoff = 1.22 cfs @ 12.09 hrs, Volume= 0.089 af, Depth= 4.56"
 Routed to Pond 2P : Galleys

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100 Year Storm Rainfall=7.59"

	Area (sf)	CN	Description
*	6,017	98	Pavement and Roofs
	4,128	39	>75% Grass cover, Good, HSG A
	10,145	74	Weighted Average
	4,128		40.69% Pervious Area
	6,017		59.31% Impervious Area

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

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Summary for Subcatchment 3S: To West Galleys

Runoff = 1.16 cfs @ 12.10 hrs, Volume= 0.092 af, Depth= 2.10"
 Routed to Pond 3P : Galleys

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
 Type III 24-hr 100 Year Storm Rainfall=7.59"

	Area (sf)	CN	Description
*	4,464	98	Roofs, porches, decks
	18,336	39	>75% Grass cover, Good, HSG A
	22,800	51	Weighted Average
	18,336		80.42% Pervious Area
	4,464		19.58% Impervious Area

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

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Type III 24-hr 100 Year Storm Rainfall=7.59"

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Summary for Subcatchment 4S: To Main Street

Runoff = 0.13 cfs @ 12.10 hrs, Volume= 0.010 af, Depth= 3.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 Year Storm Rainfall=7.59"

Area (sf)	CN	Description
* 600	98	Pavement
1,000	39	>75% Grass cover, Good, HSG A
1,600	61	Weighted Average
1,000		62.50% Pervious Area
600		37.50% Impervious Area

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

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Summary for Pond 1P: Galleys

Inflow Area = 0.217 ac, 64.77% Impervious, Inflow Depth = 4.90" for 100 Year Storm event
 Inflow = 1.21 cfs @ 12.09 hrs, Volume= 0.089 af
 Outflow = 0.24 cfs @ 12.54 hrs, Volume= 0.089 af, Atten= 81%, Lag= 27.0 min
 Discarded = 0.24 cfs @ 12.54 hrs, Volume= 0.089 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 25.88' @ 12.54 hrs Surf.Area= 640 sf Storage= 1,167 cf

Plug-Flow detention time= 37.8 min calculated for 0.088 af (100% of inflow)
 Center-of-Mass det. time= 37.5 min (849.4 - 811.8)

Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	823 cf	8.00'W x 80.00'L x 4.50'H Crushed Stone 2,880 cf Overall - 821 cf Embedded = 2,059 cf x 40.0% Voids
#2	23.50'	593 cf	Concrete Galley 4x4x3 x 19 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf
		1,416 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.50'	8.270 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.24 cfs @ 12.54 hrs HW=25.87' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.24 cfs)

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Village Townhouses 434 Main St. Wareham
Type III 24-hr 100 Year Storm Rainfall=7.59"

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Summary for Pond 2P: Galleys

Inflow Area = 0.233 ac, 59.31% Impervious, Inflow Depth = 4.56" for 100 Year Storm event
Inflow = 1.22 cfs @ 12.09 hrs, Volume= 0.089 af
Outflow = 0.24 cfs @ 12.54 hrs, Volume= 0.088 af, Atten= 80%, Lag= 27.1 min
Discarded = 0.24 cfs @ 12.54 hrs, Volume= 0.088 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 25.69' @ 12.54 hrs Surf.Area= 672 sf Storage= 1,152 cf

Plug-Flow detention time= 36.6 min calculated for 0.088 af (100% of inflow)
Center-of-Mass det. time= 36.3 min (854.8 - 818.5)

Volume	Invert	Avail.Storage	Storage Description
#1	22.50'	864 cf	8.00'W x 84.00'L x 4.50'H Crushed Stone 3,024 cf Overall - 865 cf Embedded = 2,159 cf x 40.0% Voids
#2	23.50'	624 cf	Concrete Galley 4x4x3 x 20 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf
		1,488 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.50'	8.270 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.24 cfs @ 12.54 hrs HW=25.69' (Free Discharge)
↑1=Exfiltration (Exfiltration Controls 0.24 cfs)

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Summary for Pond 3P: Galleys

Inflow Area = 0.523 ac, 19.58% Impervious, Inflow Depth = 2.10" for 100 Year Storm event
 Inflow = 1.16 cfs @ 12.10 hrs, Volume= 0.092 af
 Outflow = 0.32 cfs @ 12.52 hrs, Volume= 0.092 af, Atten= 72%, Lag= 25.2 min
 Discarded = 0.32 cfs @ 12.52 hrs, Volume= 0.092 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 25.70' @ 12.52 hrs Surf.Area= 768 sf Storage= 916 cf

Plug-Flow detention time= 21.8 min calculated for 0.092 af (100% of inflow)
 Center-of-Mass det. time= 21.6 min (893.2 - 871.6)

Volume	Invert	Avail.Storage	Storage Description
#1	22.80'	1,348 cf	8.00'W x 12.00'L x 4.50'H Crushed Stone x 8 3,456 cf Overall - 86 cf Embedded = 3,370 cf x 40.0% Voids
#2	23.80'	62 cf	Concrete Galley 4x4x3 x 2 Inside #1 Inside= 42.0"W x 30.0"H => 8.91 sf x 3.50'L = 31.2 cf Outside= 48.0"W x 36.0"H => 10.81 sf x 4.00'L = 43.2 cf 2 Chambers in 8 Rows
		1,410 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.80'	8.270 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.32 cfs @ 12.52 hrs HW=25.70' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.32 cfs)

Water Quality Volume Calculation

Required Water Quality Depth = 1.0 inch volume from impervious surfaces.

Impervious Area to Galley System 1 = 6,124 sf

WQV = 6,124 sf x 1.0 in x 1 ft/12 in = 510.3 cf

Volume Available in System 1 = 1,416 cf (HydroCAD)

1,416 cf > 510.3 cf OK

Impervious Area to Galley System 2 = 6,017 sf

WQV = 6,017 sf x 1.0 in x 1 ft/12 in = 501.4 cf

Volume Available in System 2 = 1,488 cf (HydroCAD)

1,488 cf > 501.4 OK

Impervious Area to Galley System 3 = 4,464 sf

WQV = 4,464 sf x 1.0 in x 1 ft/12 in = 372 cf

Volume Available in System 3 = 1,583 cf (HydroCAD)

1,583 cf > 372 OK

Required Recharge Volume Calculation

Galley Systems

Total Impervious Area to Galley System 1 = 6,124 sf

Required Recharge Depth = 0.6 inches (HSG A Soil)

Required Recharge Volume = 6,124 sf x 0.6"/12 = 306.2 cf

Available Storage = 1,416 cf (HydroCAD)

1,416 cf > 306.2 cf - OK

Recharge System Drawdown time (72 hours maximum for 100 year storm volume)

Time = $\frac{\text{Storage Volume}}{\text{(Rawls Rate) (Bottom Area)}}$

Time = $\frac{1,167 \text{ cf}}{(8.27 \text{ inches/hour}) (1\text{ft}/12\text{inches}) (640 \text{ sf})}$

= 2.6 hours < 72 hours - OK

Total Impervious Area to Galley System 2 = 6,017 sf

Required Recharge Volume = 6,017 sf x 0.6"/12 = 300.9 cf

Available Storage = 1,488 cf

1,488 cf > 300.9 cf - OK

Recharge System Drawdown time

Time = $\frac{1,152 \text{ cf}}{(8.27 \text{ inches/hour}) (1\text{ft}/12\text{inches}) (672 \text{ sf})}$

= 2.5 hours < 72 hours - OK

Total Impervious Area to Galley System 3 = 4,464 sf

Required Recharge Volume = 4,464 sf x 0.6"/12 = 223.2 cf

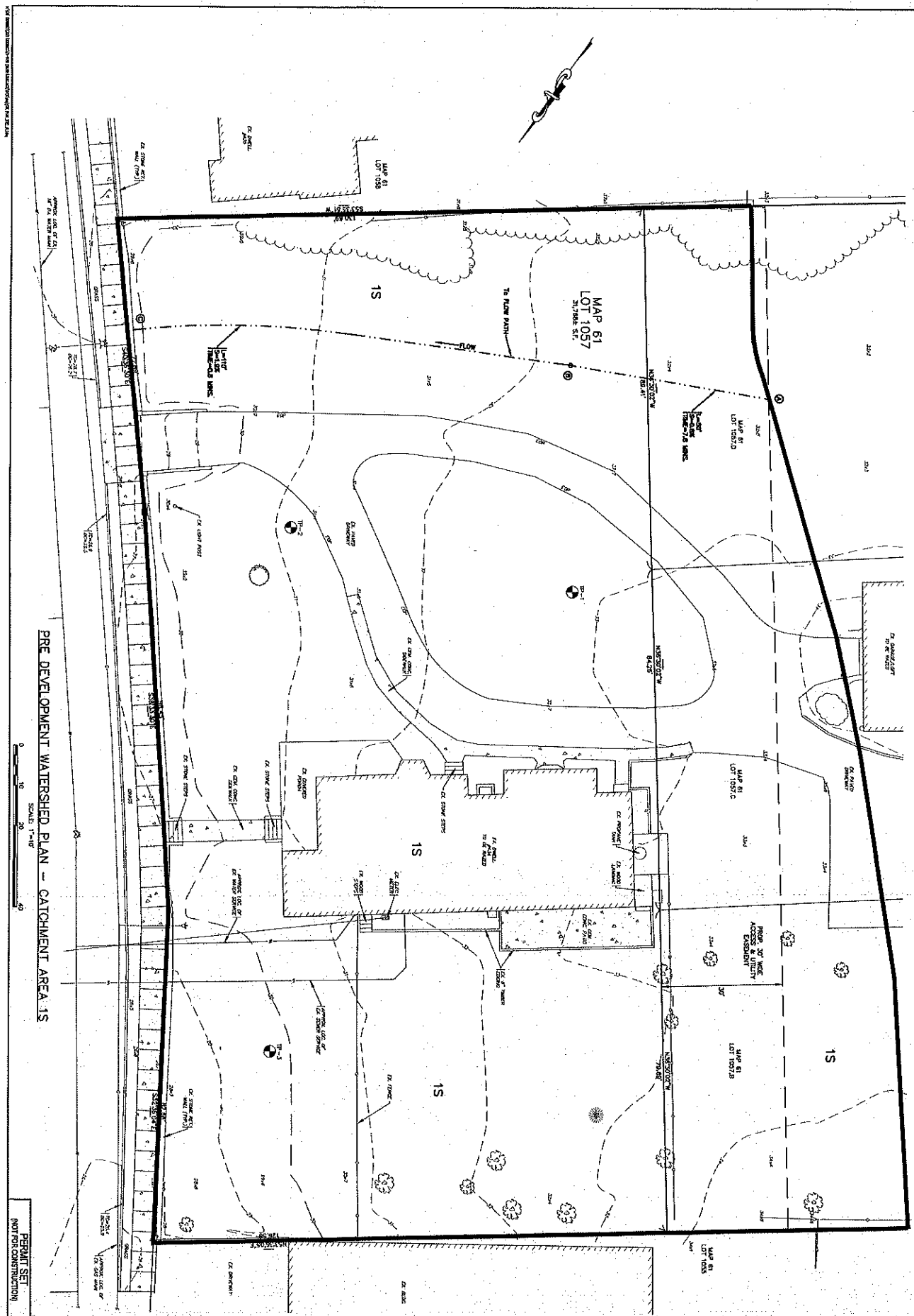
Available Storage = 1,583 cf


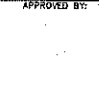
1,583 cf > 223.2 cf – OK

Recharge System Drawdown time

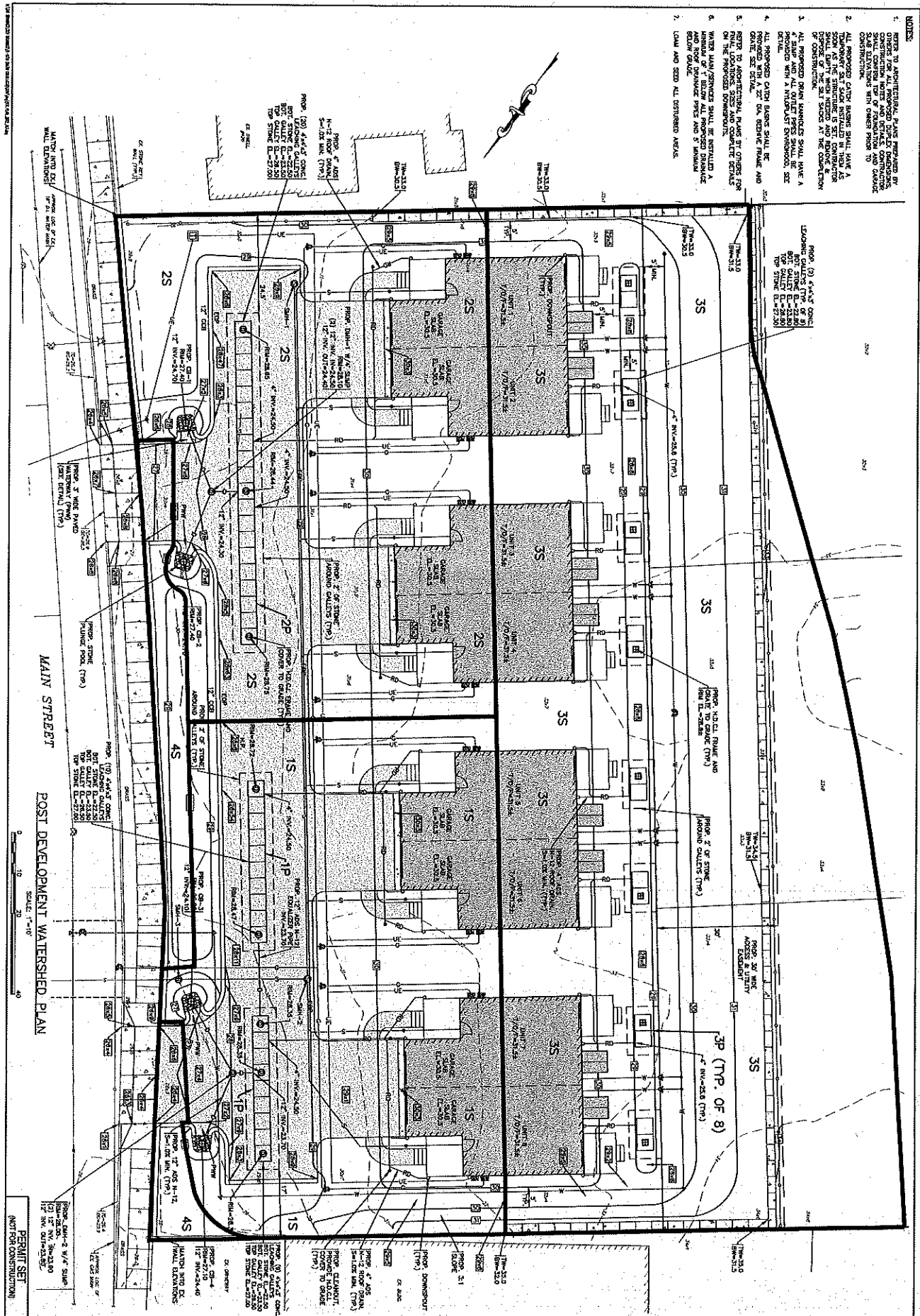
Time = $\frac{916 \text{ cf}}{(8.27 \text{ inches/hour}) (1\text{ft}/12\text{inches}) (864 \text{ sf})}$

= 1.5 hours < 72 hours - OK



PERMIT SET NOT FOR CONSTRUCTION DWG. NO. 21-0251 1 OF 2	PRE DEVELOPMENT WATERSHED PLAN CATCHMENT AREA 1S 434 MAIN STREET - WAREHAM, MA PREPARED FOR: NAZIH B. ELKALLASSI 20 TOWER TERRACE WAREHAM, MA	G.A.F. ENGINEERING, INC. PROFESSIONAL ENGINEERS & LAND SURVEYORS 254 MAIN STREET - WAREHAM, MA 02571 TEL: (508) 295-6800 FAX: (508) 295-6834 E-MAIL: info@gafeng.com	APPROVED BY: 	APPROVED BY: 	DATE: SEPT. 8, 2022 DRAWN BY: JWP CHECKED BY: RFM JOB NO.: 21-0251 SCALE: 1" = 10'	<table border="1"> <thead> <tr> <th>REV.</th> <th>DATE</th> <th>BY</th> <th>APP'D</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2/14/23</td> <td>JWP</td> <td>RFM</td> <td>NO CHANGE THIS SHEET</td> </tr> </tbody> </table>	REV.	DATE	BY	APP'D	DESCRIPTION	1	2/14/23	JWP	RFM	NO CHANGE THIS SHEET
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1	2/14/23	JWP	RFM	NO CHANGE THIS SHEET												

- NOTES:**
1. REFER TO ARCHITECTURAL PLANS PREPARED BY OTHERS FOR ALL PROPOSED STRUCTURES. SMALL CONCRETE TYP OF FOUNDATION AND CONCRETE SHALL BE CONFORM TO THE REQUIREMENTS OF THE LOCAL BUILDING DEPARTMENT. ALL CONCRETE SHALL BE PROTECTED WITH CHAIRS PRIOR TO CASTING.
 2. ALL PROPOSED DRIVEWAYS SHALL HAVE A 12" MIN. CONC. SLAB WITH 4" REINFORCING BARS AND 1" FIBER. THE FINISH SHALL BE CONCRETE ON TOP OF THE SLAB. THE CONSTRUCTION OF DRIVEWAYS SHALL BE IN ACCORDANCE WITH THE LOCAL BUILDING DEPARTMENT. SEE DETAIL.
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<p>PERMIT SET (NOT FOR CONSTRUCTION)</p> <p>DWG. NO. 2 OF 2</p>	<p>PRE DEVELOPMENT WATERSHED PLAN</p> <p>434 MAIN STREET WARDHAM, MA</p> <p>PREPARED FOR: NAZIH B. ELKALLASSI</p> <p>20 TOWER TERRACE WARDHAM, MA</p>	<p>G.A.F. ENGINEERING, INC. PROFESSIONAL ENGINEERS & LAND SURVEYORS</p> <p>268 MAIN STREET - WARDHAM, MA 02871 TEL: (508) 285-6900 - FAX: (508) 285-6934</p> <p>REGISTERED PROFESSIONAL ENGINEER STATE OF MASSACHUSETTS LICENSE NO. 10123</p>	<p>APPROVED BY: [Signature]</p> <p>DATE: SEPT. 8, 2022</p> <p>DRAWN BY: JWP</p> <p>CHECKED BY: WFM</p> <p>JOB NO.: 21-9251</p> <p>SCALE: 1" = 10'</p>	<table border="1"> <thead> <tr> <th>REV.</th> <th>DATE</th> <th>BY</th> <th>APP'D</th> <th>TOWN COMMENTS/REV. BLDG. FOOTPRINTS</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2/14/23</td> <td>JWP</td> <td>WFM</td> <td></td> <td></td> </tr> </tbody> </table>	REV.	DATE	BY	APP'D	TOWN COMMENTS/REV. BLDG. FOOTPRINTS	DESCRIPTION	1	2/14/23	JWP	WFM		
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<p>20 TOWER TERRACE WARDHAM, MA</p>	<p>APPROVED BY: [Signature]</p>	<p>DATE: SEPT. 8, 2022</p>	<p>DRAWN BY: JWP</p> <p>CHECKED BY: WFM</p> <p>JOB NO.: 21-9251</p> <p>SCALE: 1" = 10'</p>	<table border="1"> <thead> <tr> <th>REV.</th> <th>DATE</th> <th>BY</th> <th>APP'D</th> <th>TOWN COMMENTS/REV. BLDG. FOOTPRINTS</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2/14/23</td> <td>JWP</td> <td>WFM</td> <td></td> <td></td> </tr> </tbody> </table>	REV.	DATE	BY	APP'D	TOWN COMMENTS/REV. BLDG. FOOTPRINTS	DESCRIPTION	1	2/14/23	JWP	WFM		
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