The seal affixed above applies to this report and all attachments including the HydroCAD calculations, Stormwater Plans D1, D2

Preliminary/Final Site Plan Application
Stormwater Management Plan

"YORK SANDS VILLAGE"

YORK, MAINE

Prepared for

James Paolini
40 Godfrey Cove Road
York, ME 03909

Revised January *2021*

Site Plan Application

STORMWATER MANAGEMENT PLAN

"York Sands Village"
122 Long Sands Road
York, Maine

Prepared for:

James Paolini
40 Godfrey Cove Rd.
York, ME 03909

Revised January, 2021

INTRODUCTION:

The proposed development is located at 122 Long Sands Road in York, Maine. The lot is known as Map 120, Lot 139 (Old Tax Map 44, Lot 38) on the Town of York tax map system. The existing lot contains approximately 1.64 acres of land, of which 0.16 acres is impervious coverage.

There is an existing 1,246 SF timber framed residence with paved driveway access from Long Sands Road. An in-ground pool with a surrounding concrete walkway is located to the rear of the building. Additional timber stairs and walkways lead from the pool to the residence.

The developed portion of the site contains grass cover with exposed ledge. The east and west portions of the lot contain predominantly undisturbed wood cover.

The new development will consist of the construction of 6,656 SF of elderly housing units with a new associated parking lot. The lot will gain access to the site via a paved one way street from Fernald Ave., creating two new access points. The existing residence will remain and shall be converted to two additional elderly housing units. The pool and concrete walk will be removed to make room for the new paved parking area.

The project will disturb less than an acre and will not require DEP review. The impervious area of the site will increase but will remain under the allowable 25% lot coverage for the Res-1b zone.

DESIGN REQUIREMENTS:

Section 9.8.2 of the Town of York Site Plan Regulations require post-development peak discharges be limited to pre-development levels for a 2- year and 100-year, 24 hour storm.

The analysis for this report includes the 2-year and 100-year events to predict the downstream effects of the proposed site coverage changes.

EXISTING DRAINAGE CONDITIONS:

The existing lot generally slopes from northwest to the southeast. The lot is broken up into three distinct drainage areas: The southern portion of the site, the middle portion of the site, and the northern portion of the site.

The southern portion of the site slopes from Fernald Ave. down to an existing catch basin along Long Sands Road. This is modeled as OUT 1.

While the middle portion of the site also slopes from Fernald Ave down to Long Sands Road, the southern and middle drainage areas are separated by a high point that runs the length of the lot. The middle portion of the site drains to a separate catch basin on Long Sands Road. This is modeled as OUT 2.

The northern portion of the site does not flow directly towards Long Sands Road but instead flows East to a low point that outlets to the abutting property Map 120, Lot 141. This is modeled as OUT 3. ***Though not modeled, the flow continues through the abutting property and eventually arrives at Long Sands Road.***

The analysis of the existing drainage has been limited in extent to the property line. This is justified by the fact that all stormwater is directed away from the property due to natural grades.

Based on the Medium Intensity Soil Survey (Attachment B) obtained from the NRCA Web Soil Survey website, soils in the watershed were found to be entirely hydrologic soil type D soils. See sheet D1 for the pre-development drainage conditions.

The area to be developed is not located in a flood zone. A copy of the applicable FEMA map is included ***in the Town Site Plan Application*** as attachment I.

PROPOSED DRAINAGE:

The proposed site has been designed to limit post-development flows off site to pre-development levels during 2-year and 100-year storms. This will ensure that there are minimal adverse downstream impacts as a result of the new development.

The post-development site will be broken into four large drainage areas and four smaller subcatchments for each pair of the proposed units. The development has been designed to collect roof runoff and direct the flow to new gravel dripline filters.

Per previous discussions with the MDEP, the gravel dripline filters are assumed to take a minimum direct entry time of concentration of 45 minutes. This is due to the time is takes for water to drain through the gravel layer and outlet from the perforated receiving pipe.

By assuming the runoff from the new roofs is collected by the dripline filters, OUT 1 remains very similar to pre-development conditions. Stormwater will continue to flow towards the existing catch basins along Long Sands Road.

After taking into account planning department comments regarding abutters, a berm has been designed to prevent most of the new development's stormwater from flowing on to the east abutter's property. This lowers the flows to OUT 3 and reduces the impact on the east abutter.

By preventing runoff from flowing towards OUT 3, most of the new development is now directed towards OUT 2. However, as previously mentioned, all flows eventually reach Long Sands Road. Thus, the drainage design reduces flow to the east abutter's property while simultaneously reducing the overall flow to Long Sands Road.

A new level lip spreader will be utilized to convert runoff from the northern portion of the development back into sheet flow, reducing the runoff velocity and slowing the overall discharge.

ANALYSIS:

The overall perimeter of the watershed remained the same for both Pre- and Post Development analyses. There were three sub-catchments identified in the Pre-Development analysis and eight in the Post-Development analysis.

Three distinct discharge points were used to compare the pre and post-development storm water flows to ensure the town standards were met.

For further details regarding subcatchment determination, refer to the project drawings and D1 & D2 included with this report.

METHODOLOGY:

All runoff calculations were performed using methods based on USDA–SCS Technical Release No. 20 (also known as TR-20). The 2- and 100-year events for the city of Portland, Maine (Type III rainfall distribution) were used for the analysis to determine the pre- and post-development peak discharge rates per Town of York requirements. Rainfall data was obtained from MDEP Chapter 500 Appendix H, 24 hour rainfalls for York County.

Runoff curve numbers (CN) and times of concentration (Tc) were determined by the methods outlined in USDA-SCS Technical Release No. 55 (better known as TR-55). On site watershed areas were determined using two-foot contour data gathered from an on the ground field survey performed by Anderson Livingston Engineers.

The detailed analysis for this project was performed by computer utilizing "HYDROCAD" stormwater modeling software. The computer printouts are attached.

The attached Pre- and Post Development plans (D1 & D2) show subcatchment boundaries, hydraulic flow lines, existing and proposed roads, and drainage features and facilities. Land cover type boundaries used in the model for on-site areas are also shown on the plan (i.e. tree lines, gravel, etc).

FLOW RATES (REVISED):

TWO-YEAR EVENT -

Discharge Point Desig Pre/Post	Peak Runoff(in cfs) Pre	Post	Change (cfs)
OUT 1	0.55	0.57	+0.02
OUT 2	1.38	1.63	+0.25
OUT 3	0.82	0.30	-0.52
			-0.25

ONE HUNDRED-YEAR EVENT -

Discharge Point Desig Pre/Post	Peak Runoff(in cfs) Pre	Post	Change (cfs)
OUT 1	2.34	2.34	0.00
OUT 2	5.27	6.06	+0.79
OUT 3	3.44	1.24	-2.20
			-1.41

Although there are increases to individual analysis points OUT 1 and OUT 2, the proposed stormwater management design drastically reduces the flow to the east abutter's property (OUT 3) compared to the pre-development condition. As previously mentioned, all runoff eventually reaches the municipal stormwater collection system along Long Sands Road. Therefore, the total flow entering the municipal system has been decreased during a 2-year and 100-year storm.

A stormwater maintenance and inspection plan has also been included as part of this submission.

CONCLUSIONS:

The slope and poor soils on site make it difficult to design and implement stormwater control. LID methods are proposed to limit the affects of runoff to the abutting property. This includes a gravel drip edge around the new buildings, a new level lip spreader, ***and a berm to reduce the potential impact to the east abutter.***

It is our opinion that there will be no adverse downstream impacts as a result of this project, and the surrounding lots have been sufficiently protected by the proposed stormwater management plan.

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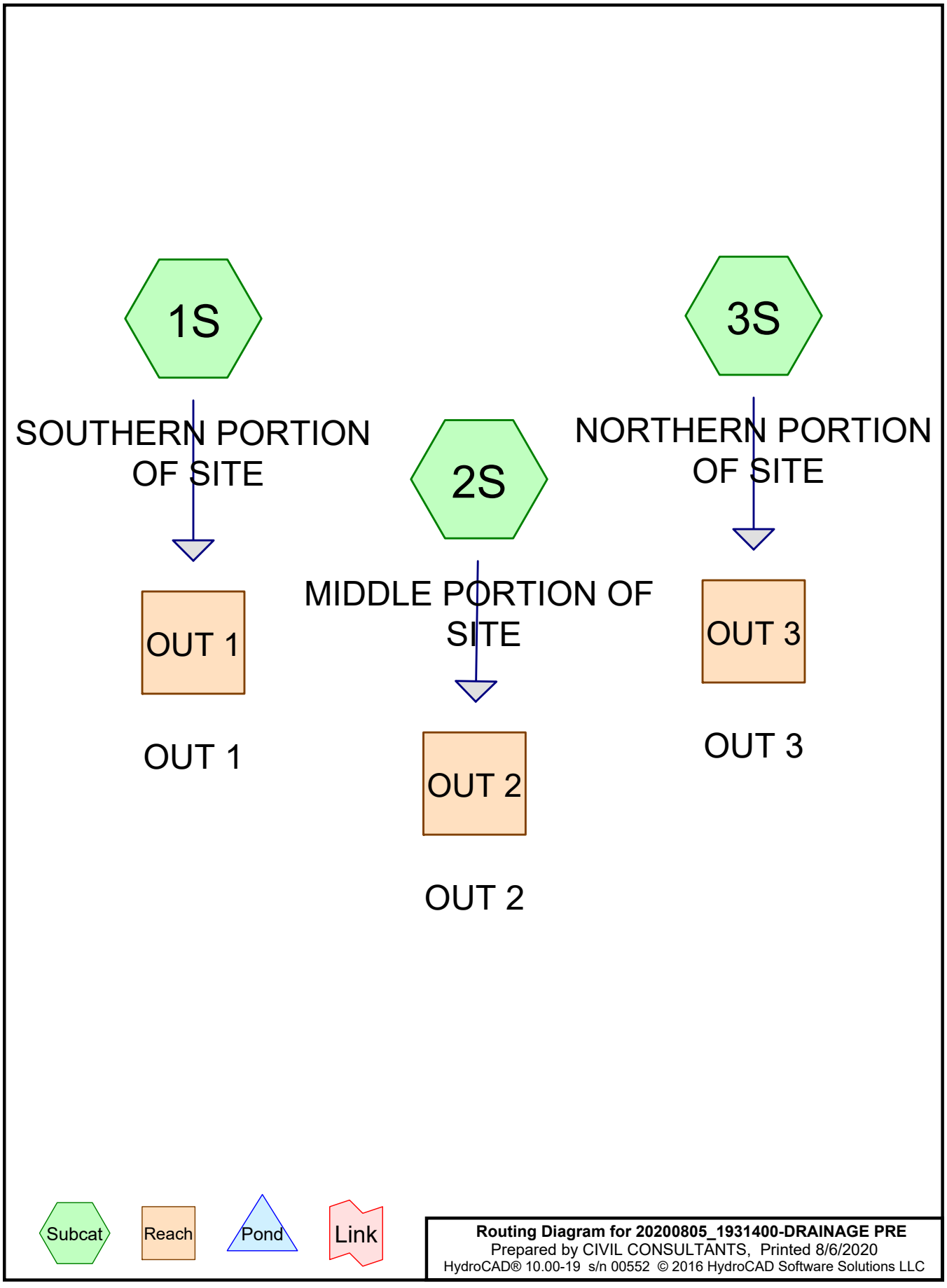


Routing Diagram for 20200805_1931400-DRAINAGE PRE
Prepared by CIVIL CONSULTANTS, Printed 8/6/2020

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.303	80	>75% Grass cover, Good, HSG D (1S, 2S, 3S)
0.107	98	Paved parking, HSG D (1S, 2S, 3S)
0.029	98	Roofs, HSG D (2S)
0.044	98	Unconnected pavement, HSG D (1S, 2S, 3S)
0.011	98	Water Surface, HSG D (2S)
1.144	79	Woods/grass comb., Good, HSG D (1S, 2S, 3S)
1.637	**81**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
1.637	HSG D	1S, 2S, 3S
0.000	Other	
1.637		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.303	0.000	0.303	>75% Grass cover, Good	1S, 2S, 3S
0.000	0.000	0.000	0.107	0.000	0.107	Paved parking	1S, 2S, 3S
0.000	0.000	0.000	0.029	0.000	0.029	Roofs	2S
0.000	0.000	0.000	0.044	0.000	0.044	Unconnected pavement	1S, 2S, 3S
0.000	0.000	0.000	0.011	0.000	0.011	Water Surface	2S
0.000	0.000	0.000	1.144	0.000	1.144	Woods/grass comb., Good	1S, 2S, 3S
0.000	**0.000**	**0.000**	**1.637**	**0.000**	**1.637**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SOUTHERN PORTION Runoff Area=15,619 sf 7.13% Impervious Runoff Depth=1.48"
Flow Length=258' Tc=8.6 min CN=80 Runoff=0.55 cfs 0.044 af

Subcatchment 2S: MIDDLE PORTION OF Runoff Area=34,595 sf 19.31% Impervious Runoff Depth=1.69"
Flow Length=249' Tc=9.3 min CN=83 Runoff=1.38 cfs 0.112 af

Subcatchment 3S: NORTHERN PORTION Runoff Area=21,111 sf 2.50% Impervious Runoff Depth=1.48"
Flow Length=144' Tc=5.7 min CN=80 Runoff=0.82 cfs 0.060 af

Reach OUT 1: OUT 1 Inflow=0.55 cfs 0.044 af
Outflow=0.55 cfs 0.044 af

Reach OUT 2: OUT 2 Inflow=1.38 cfs 0.112 af
Outflow=1.38 cfs 0.112 af

Reach OUT 3: OUT 3 Inflow=0.82 cfs 0.060 af
Outflow=0.82 cfs 0.060 af

Total Runoff Area = 1.637 ac Runoff Volume = 0.216 af Average Runoff Depth = 1.58"
88.34% Pervious = 1.446 ac 11.66% Impervious = 0.191 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1S: SOUTHERN PORTION Runoff Area=15,619 sf 7.13% Impervious Runoff Depth=6.28"
Flow Length=258' Tc=8.6 min CN=80 Runoff=2.34 cfs 0.188 af

Subcatchment 2S: MIDDLE PORTION OF Runoff Area=34,595 sf 19.31% Impervious Runoff Depth=6.65"
Flow Length=249' Tc=9.3 min CN=83 Runoff=5.27 cfs 0.440 af

Subcatchment 3S: NORTHERN PORTION Runoff Area=21,111 sf 2.50% Impervious Runoff Depth=6.28"
Flow Length=144' Tc=5.7 min CN=80 Runoff=3.44 cfs 0.254 af

Reach OUT 1: OUT 1 Inflow=2.34 cfs 0.188 af
Outflow=2.34 cfs 0.188 af

Reach OUT 2: OUT 2 Inflow=5.27 cfs 0.440 af
Outflow=5.27 cfs 0.440 af

Reach OUT 3: OUT 3 Inflow=3.44 cfs 0.254 af
Outflow=3.44 cfs 0.254 af

Total Runoff Area = 1.637 ac Runoff Volume = 0.882 af Average Runoff Depth = 6.46"
88.34% Pervious = 1.446 ac 11.66% Impervious = 0.191 ac

Summary for Subcatchment 1S: SOUTHERN PORTION OF SITE

Runoff = 2.34 cfs @ 12.12 hrs, Volume= 0.188 af, Depth= 6.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.70"

Area (sf)	CN	Description
625	80	>75% Grass cover, Good, HSG D
13,880	79	Woods/grass comb., Good, HSG D
779	98	Paved parking, HSG D
335	98	Unconnected pavement, HSG D
15,619	80	Weighted Average
14,505		92.87% Pervious Area
1,114		7.13% Impervious Area
335		30.07% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.1100	0.14		**Sheet Flow, 1.1** Woods: Light underbrush n= 0.400 P2= 3.30"
1.8	105	0.0381	0.98		**Shallow Concentrated Flow, 1.2** Woodland Kv= 5.0 fps
0.6	80	0.2125	2.30		**Shallow Concentrated Flow, 1.3** Woodland Kv= 5.0 fps
0.1	23	0.2174	3.26		**Shallow Concentrated Flow, 1.4** Short Grass Pasture Kv= 7.0 fps
8.6	258	Total			

Summary for Subcatchment 2S: MIDDLE PORTION OF SITE

Runoff = 5.27 cfs @ 12.13 hrs, Volume= 0.440 af, Depth= 6.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.70"

Area (sf)	CN	Description
10,623	80	>75% Grass cover, Good, HSG D
17,293	79	Woods/grass comb., Good, HSG D
1,246	98	Roofs, HSG D
3,445	98	Paved parking, HSG D
1,490	98	Unconnected pavement, HSG D
498	98	Water Surface, HSG D
34,595	83	Weighted Average
27,916		80.69% Pervious Area
6,679		19.31% Impervious Area
1,490		22.31% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0500	0.10		**Sheet Flow, 2.1** Woods: Light underbrush n= 0.400 P2= 3.30"
0.4	75	0.1733	2.91		**Shallow Concentrated Flow, 2.2** Short Grass Pasture Kv= 7.0 fps
0.2	66	0.0985	6.37		**Shallow Concentrated Flow, 2.3** Paved Kv= 20.3 fps
0.3	58	0.1724	2.91		**Shallow Concentrated Flow, 2.4** Short Grass Pasture Kv= 7.0 fps
9.3	249	Total			

Summary for Subcatchment 3S: NORTHERN PORTION OF SITE

[49] Hint: Tc<2dt may require smaller dt

Runoff = 3.44 cfs @ 12.09 hrs, Volume= 0.254 af, Depth= 6.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.70"

Area (sf)	CN	Description
18,649	79	Woods/grass comb., Good, HSG D
1,935	80	>75% Grass cover, Good, HSG D
435	98	Paved parking, HSG D
92	98	Unconnected pavement, HSG D
21,111	80	Weighted Average
20,584		97.50% Pervious Area
527		2.50% Impervious Area
92		17.46% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	40	0.1250	0.14		**Sheet Flow, 3.1** Woods: Light underbrush n= 0.400 P2= 3.30"
0.8	104	0.1667	2.04		**Shallow Concentrated Flow, 3.2** Woodland Kv= 5.0 fps
5.7	144	Total			

Summary for Reach OUT 1: OUT 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.359 ac, 7.13% Impervious, Inflow Depth = 6.28" for 100 YR event
Inflow = 2.34 cfs @ 12.12 hrs, Volume= 0.188 af
Outflow = 2.34 cfs @ 12.12 hrs, Volume= 0.188 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 3

Summary for Reach OUT 2: OUT 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.794 ac, 19.31% Impervious, Inflow Depth = 6.65" for 100 YR event
Inflow = 5.27 cfs @ 12.13 hrs, Volume= 0.440 af
Outflow = 5.27 cfs @ 12.13 hrs, Volume= 0.440 af, Atten= 0%, Lag= 0.0 min

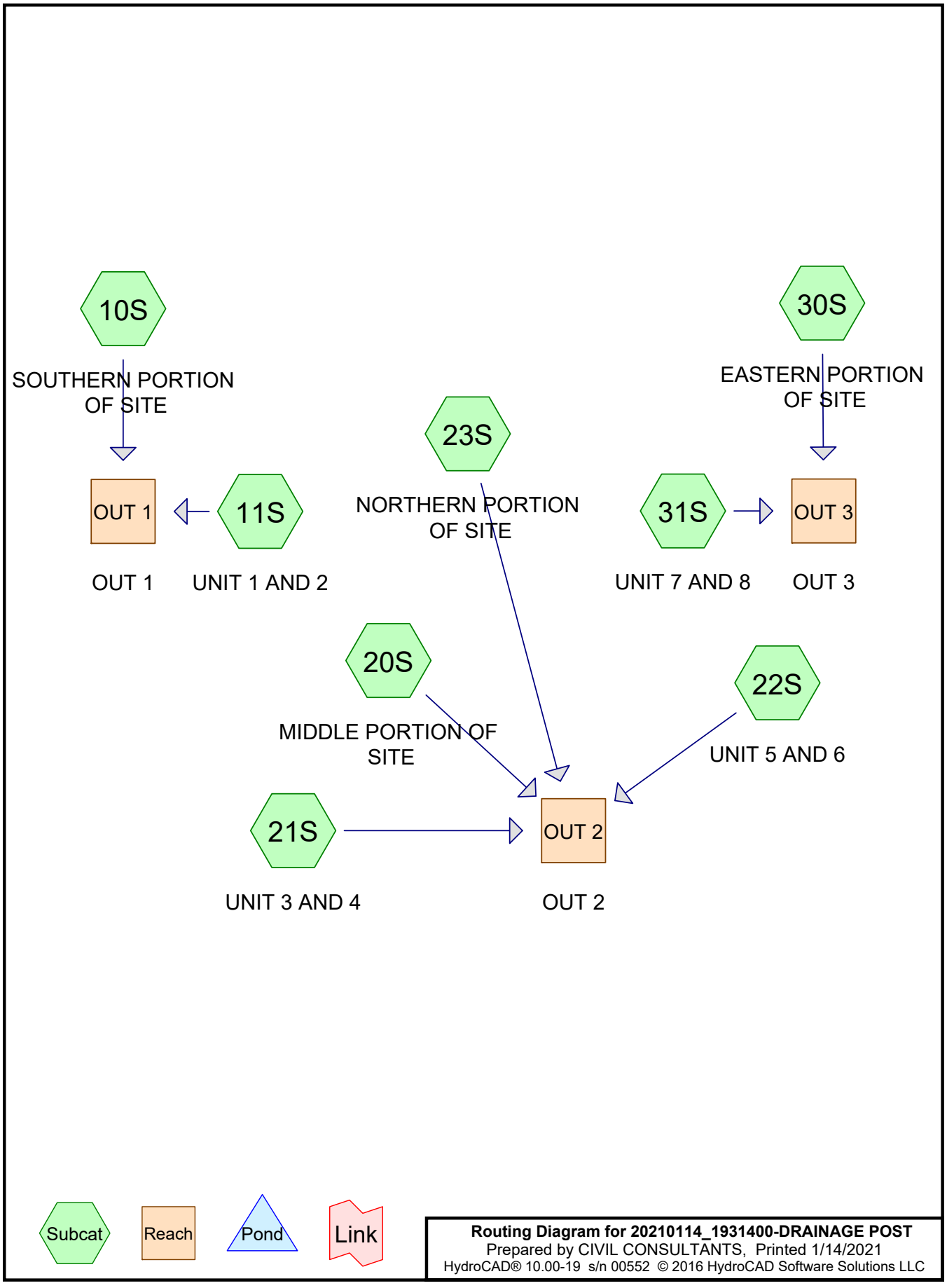
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 3

Summary for Reach OUT 3: OUT 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.485 ac, 2.50% Impervious, Inflow Depth = 6.28" for 100 YR event
Inflow = 3.44 cfs @ 12.09 hrs, Volume= 0.254 af
Outflow = 3.44 cfs @ 12.09 hrs, Volume= 0.254 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 3



Routing Diagram for 20210114_1931400-DRAINAGE POST
Prepared by CIVIL CONSULTANTS, Printed 1/14/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.478	80	>75% Grass cover, Good, HSG D (10S, 11S, 20S, 21S, 22S, 23S, 30S, 31S)
0.035	96	Gravel surface, HSG D (11S, 21S, 22S, 31S)
0.187	98	Paved parking, HSG D (10S, 20S, 23S, 30S)
0.181	98	Roofs, HSG D (11S, 20S, 21S, 22S, 31S)
0.067	98	Unconnected pavement, HSG D (10S, 20S, 21S, 22S, 23S, 30S, 31S)
0.002	98	Unconnected roofs, HSG D (11S)
0.687	79	Woods/grass comb., Good, HSG D (10S, 20S, 23S, 30S)
1.637	**85**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
1.637	HSG D	10S, 11S, 20S, 21S, 22S, 23S, 30S, 31S
0.000	Other	
1.637		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.478	0.000	0.478	>75% Grass cover, Good	10S, 11S, 20S, 21S, 22S, 23S, 30S, 31S
0.000	0.000	0.000	0.035	0.000	0.035	Gravel surface	11S, 21S, 22S, 31S
0.000	0.000	0.000	0.187	0.000	0.187	Paved parking	10S, 20S, 23S, 30S
0.000	0.000	0.000	0.181	0.000	0.181	Roofs	11S, 20S, 21S, 22S, 31S
0.000	0.000	0.000	0.067	0.000	0.067	Unconnected pavement	10S, 20S, 21S, 22S, 23S, 30S, 31S
0.000	0.000	0.000	0.002	0.000	0.002	Unconnected roofs	11S
0.000	0.000	0.000	0.687	0.000	0.687	Woods/grass comb., Good	10S, 20S, 23S, 30S
0.000	**0.000**	**0.000**	**1.637**	**0.000**	**1.637**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: SOUTHERN PORTION Runoff Area=14,006 sf 7.69% Impervious Runoff Depth=1.48"
Flow Length=242' Tc=6.2 min UI Adjusted CN=80 Runoff=0.54 cfs 0.040 af

Subcatchment 11S: UNIT 1 AND 2 Runoff Area=2,184 sf 79.21% Impervious Runoff Depth=2.96"
Flow Length=40' Tc=45.0 min CN=97 Runoff=0.07 cfs 0.012 af

Subcatchment 20S: MIDDLE PORTION OF Runoff Area=28,068 sf 23.51% Impervious Runoff Depth=1.69"
Flow Length=215' Tc=7.2 min UI Adjusted CN=83 Runoff=1.21 cfs 0.091 af

Subcatchment 21S: UNIT 3 AND 4 Runoff Area=2,184 sf 78.39% Impervious Runoff Depth=2.96"
Flow Length=40' Tc=45.0 min CN=97 Runoff=0.07 cfs 0.012 af

Subcatchment 22S: UNIT 5 AND 6 Runoff Area=2,184 sf 79.12% Impervious Runoff Depth=2.96"
Flow Length=40' Tc=45.0 min CN=97 Runoff=0.07 cfs 0.012 af

Subcatchment 23S: NORTHERN PORTION Runoff Area=13,162 sf 32.74% Impervious Runoff Depth=1.92"
Flow Length=345' Tc=16.8 min CN=86 Runoff=0.49 cfs 0.048 af

Subcatchment 30S: EASTERN PORTION OF Runoff Area=7,352 sf 2.20% Impervious Runoff Depth=1.41"
Flow Length=95' Tc=6.2 min UI Adjusted CN=79 Runoff=0.27 cfs 0.020 af

Subcatchment 31S: UNIT 7 AND 8 Runoff Area=2,184 sf 78.66% Impervious Runoff Depth=2.96"
Flow Length=40' Tc=45.0 min CN=97 Runoff=0.07 cfs 0.012 af

Reach OUT 1: OUT 1 Inflow=0.57 cfs 0.052 af
Outflow=0.57 cfs 0.052 af

Reach OUT 2: OUT 2 Inflow=1.63 cfs 0.164 af
Outflow=1.63 cfs 0.164 af

Reach OUT 3: OUT 3 Inflow=0.30 cfs 0.032 af
Outflow=0.30 cfs 0.032 af

Total Runoff Area = 1.637 ac Runoff Volume = 0.248 af Average Runoff Depth = 1.82"
73.31% Pervious = 1.200 ac 26.69% Impervious = 0.437 ac

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: SOUTHERN PORTION Runoff Area=14,006 sf 7.69% Impervious Runoff Depth=6.28"
Flow Length=242' Tc=6.2 min UI Adjusted CN=80 Runoff=2.26 cfs 0.168 af

Subcatchment 11S: UNIT 1 AND 2 Runoff Area=2,184 sf 79.21% Impervious Runoff Depth=8.34"
Flow Length=40' Tc=45.0 min CN=97 Runoff=0.20 cfs 0.035 af

Subcatchment 20S: MIDDLE PORTION OF Runoff Area=28,068 sf 23.51% Impervious Runoff Depth=6.65"
Flow Length=215' Tc=7.2 min UI Adjusted CN=83 Runoff=4.61 cfs 0.357 af

Subcatchment 21S: UNIT 3 AND 4 Runoff Area=2,184 sf 78.39% Impervious Runoff Depth=8.34"
Flow Length=40' Tc=45.0 min CN=97 Runoff=0.20 cfs 0.035 af

Subcatchment 22S: UNIT 5 AND 6 Runoff Area=2,184 sf 79.12% Impervious Runoff Depth=8.34"
Flow Length=40' Tc=45.0 min CN=97 Runoff=0.20 cfs 0.035 af

Subcatchment 23S: NORTHERN PORTION Runoff Area=13,162 sf 32.74% Impervious Runoff Depth=7.01"
Flow Length=345' Tc=16.8 min CN=86 Runoff=1.72 cfs 0.177 af

Subcatchment 30S: EASTERN PORTION OF Runoff Area=7,352 sf 2.20% Impervious Runoff Depth=6.16"
Flow Length=95' Tc=6.2 min UI Adjusted CN=79 Runoff=1.17 cfs 0.087 af

Subcatchment 31S: UNIT 7 AND 8 Runoff Area=2,184 sf 78.66% Impervious Runoff Depth=8.34"
Flow Length=40' Tc=45.0 min CN=97 Runoff=0.20 cfs 0.035 af

Reach OUT 1: OUT 1 Inflow=2.34 cfs 0.203 af
Outflow=2.34 cfs 0.203 af

Reach OUT 2: OUT 2 Inflow=6.06 cfs 0.603 af
Outflow=6.06 cfs 0.603 af

Reach OUT 3: OUT 3 Inflow=1.24 cfs 0.122 af
Outflow=1.24 cfs 0.122 af

Total Runoff Area = 1.637 ac Runoff Volume = 0.928 af Average Runoff Depth = 6.80"
73.31% Pervious = 1.200 ac 26.69% Impervious = 0.437 ac

Summary for Subcatchment 10S: SOUTHERN PORTION OF SITE

Runoff = 2.26 cfs @ 12.09 hrs, Volume= 0.168 af, Depth= 6.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.70"

Area (sf)	CN	Adj	Description
2,669	80		>75% Grass cover, Good, HSG D
10,260	79		Woods/grass comb., Good, HSG D
779	98		Paved parking, HSG D
298	98		Unconnected pavement, HSG D
14,006	81	80	Weighted Average, UI Adjusted
12,929			92.31% Pervious Area
1,077			7.69% Impervious Area
298			27.67% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	28	0.1070	0.12		**Sheet Flow, 10.1** Woods: Light underbrush n= 0.400 P2= 3.30"
1.6	111	0.0541	1.16		**Shallow Concentrated Flow, 10.2** Woodland Kv= 5.0 fps
0.6	80	0.2125	2.30		**Shallow Concentrated Flow, 10.3** Woodland Kv= 5.0 fps
0.1	23	0.2174	3.26		**Shallow Concentrated Flow, 10.4** Short Grass Pasture Kv= 7.0 fps
6.2	242	Total			

Summary for Subcatchment 11S: UNIT 1 AND 2

Runoff = 0.20 cfs @ 12.58 hrs, Volume= 0.035 af, Depth= 8.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.70"

Area (sf)	CN	Description
1,664	98	Roofs, HSG D
384	96	Gravel surface, HSG D
66	98	Unconnected roofs, HSG D
70	80	>75% Grass cover, Good, HSG D
2,184	97	Weighted Average
454		20.79% Pervious Area
1,730		79.21% Impervious Area
66		3.82% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.0	40		0.01		**Direct Entry, GRAVEL DRIPEDGE**

Summary for Subcatchment 20S: MIDDLE PORTION OF SITE

Runoff = 4.61 cfs @ 12.10 hrs, Volume= 0.357 af, Depth= 6.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.70"

Area (sf)	CN	Adj	Description
12,028	80		>75% Grass cover, Good, HSG D
9,440	79		Woods/grass comb., Good, HSG D
1,246	98		Roofs, HSG D
3,396	98		Paved parking, HSG D
1,958	98		Unconnected pavement, HSG D
28,068	84	83	Weighted Average, UI Adjusted
21,468			76.49% Pervious Area
6,600			23.51% Impervious Area
1,958			29.67% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	50	0.0400	0.14		**Sheet Flow, 20.1** Grass: Dense n= 0.240 P2= 3.30"
0.6	91	0.1429	2.65		**Shallow Concentrated Flow, 20.2** Short Grass Pasture Kv= 7.0 fps
0.3	37	0.1081	2.30		**Shallow Concentrated Flow, 20.3** Short Grass Pasture Kv= 7.0 fps
0.2	37	0.3240	3.98		**Shallow Concentrated Flow, 20.4** Short Grass Pasture Kv= 7.0 fps
7.2	215	Total			

Summary for Subcatchment 21S: UNIT 3 AND 4

Runoff = 0.20 cfs @ 12.58 hrs, Volume= 0.035 af, Depth= 8.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.70"

Area (sf)	CN	Description
1,664	98	Roofs, HSG D
384	96	Gravel surface, HSG D
48	98	Unconnected pavement, HSG D
88	80	>75% Grass cover, Good, HSG D
2,184	97	Weighted Average
472		21.61% Pervious Area
1,712		78.39% Impervious Area
48		2.80% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.0	40		0.01		**Direct Entry, GRAVEL DRIPEDGE**

Summary for Subcatchment 22S: UNIT 5 AND 6

Runoff = 0.20 cfs @ 12.58 hrs, Volume= 0.035 af, Depth= 8.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.70"

Area (sf)	CN	Description
1,664	98	Roofs, HSG D
384	96	Gravel surface, HSG D
64	98	Unconnected pavement, HSG D
72	80	>75% Grass cover, Good, HSG D
2,184	97	Weighted Average
456		20.88% Pervious Area
1,728		79.12% Impervious Area
64		3.70% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.0	40		0.01		**Direct Entry, GRAVEL DRIPEDGE**

Summary for Subcatchment 23S: NORTHERN PORTION OF SITE

Runoff = 1.72 cfs @ 12.22 hrs, Volume= 0.177 af, Depth= 7.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.70"

Area (sf)	CN	Description
3,823	79	Woods/grass comb., Good, HSG D
5,030	80	>75% Grass cover, Good, HSG D
3,857	98	Paved parking, HSG D
452	98	Unconnected pavement, HSG D
13,162	86	Weighted Average
8,853		67.26% Pervious Area
4,309		32.74% Impervious Area
452		10.49% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	42	0.0238	0.07		**Sheet Flow, 23.1** Woods: Light underbrush n= 0.400 P2= 3.30"
0.2	55	0.0364	3.87		**Shallow Concentrated Flow, 23.2** Paved Kv= 20.3 fps
0.2	43	0.1977	3.11		**Shallow Concentrated Flow, 23.3** Short Grass Pasture Kv= 7.0 fps
0.6	150	0.0833	4.33	2.16	**Channel Flow, 23.4** Area= 0.5 sf Perim= 3.0' r= 0.17' n= 0.030 Earth, grassed & winding
5.9	55	0.1450	0.15		**Sheet Flow, 23.5** Woods: Light underbrush n= 0.400 P2= 3.30"
16.8	345	Total			

Summary for Subcatchment 30S: EASTERN PORTION OF SITE

Runoff = 1.17 cfs @ 12.09 hrs, Volume= 0.087 af, Depth= 6.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.70"

Area (sf)	CN	Adj	Description
6,405	79		Woods/grass comb., Good, HSG D
785	80		>75% Grass cover, Good, HSG D
110	98		Paved parking, HSG D
52	98		Unconnected pavement, HSG D
7,352	80	79	Weighted Average, UI Adjusted
7,190			97.80% Pervious Area
162			2.20% Impervious Area
52			32.10% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.9	50	0.1200	0.14		**Sheet Flow, 30.1** Woods: Light underbrush n= 0.400 P2= 3.30"
0.3	45	0.2444	2.47		**Shallow Concentrated Flow, 30.2** Woodland Kv= 5.0 fps
6.2	95	Total			

Summary for Subcatchment 31S: UNIT 7 AND 8

Runoff = 0.20 cfs @ 12.58 hrs, Volume= 0.035 af, Depth= 8.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100 YR Rainfall=8.70"

Area (sf)	CN	Description
1,664	98	Roofs, HSG D
384	96	Gravel surface, HSG D
54	98	Unconnected pavement, HSG D
82	80	>75% Grass cover, Good, HSG D
2,184	97	Weighted Average
466		21.34% Pervious Area
1,718		78.66% Impervious Area
54		3.14% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.0	40		0.01		**Direct Entry, GRAVEL DRIPEDGE**

Summary for Reach OUT 1: OUT 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.372 ac, 17.34% Impervious, Inflow Depth = 6.56" for 100 YR event
Inflow = 2.34 cfs @ 12.09 hrs, Volume= 0.203 af
Outflow = 2.34 cfs @ 12.09 hrs, Volume= 0.203 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 3

Summary for Reach OUT 2: OUT 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.047 ac, 31.47% Impervious, Inflow Depth = 6.91" for 100 YR event
Inflow = 6.06 cfs @ 12.11 hrs, Volume= 0.603 af
Outflow = 6.06 cfs @ 12.11 hrs, Volume= 0.603 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 3

Summary for Reach OUT 3: OUT 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.219 ac, 19.71% Impervious, Inflow Depth = 6.66" for 100 YR event
Inflow = 1.24 cfs @ 12.09 hrs, Volume= 0.122 af
Outflow = 1.24 cfs @ 12.09 hrs, Volume= 0.122 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 3

APPENDIX H. 24-hour duration rainfalls for various return periods

COUNTY	Storm Type	1-YR	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR	500-YR
ANDROSCOGGIN	III	2.5	3.0	3.7	4.3	5.4	6.4	7.6	11.1
AROOSTOOK C (Presque Isle Area)	II	1.9	2.3	2.8	3.2	3.9	4.6	5.3	7.6
AROOSTOOK N (Fort Kent Area)	II	1.9	2.2	2.7	3.1	3.7	4.3	5.0	7.0
AROOSTOOK S (Houlton Area)	II	2.1	2.5	3.0	3.4	4.1	4.7	5.4	7.5
CUMBERLAND NW (Bridgton Area)	III	2.5	3.0	3.7	4.3	5.4	6.3	7.5	10.9
CUMBERLAND SE (N Windham Area)	III	2.6	3.1	3.9	4.6	5.8	6.9	8.1	12.1
FRANKLIN	II	2.0	2.4	2.9	3.4	4.2	4.9	5.7	8.2
HANCOCK	III	2.5	2.9	3.6	4.2	5.2	6.1	7.2	10.5
KENNEBEC	III	2.4	2.8	3.5	4.2	5.2	6.1	7.2	10.6
KNOX	III	2.6	3.2	3.9	4.6	5.7	6.7	7.9	11.5
LINCOLN	III	2.5	3.1	3.8	4.5	5.5	6.5	7.6	11.1
OXFORD E (Rumford Area)	II[1]	2.3	2.7	3.3	3.9	4.8	5.7	6.7	9.7
OXFORD W (Gilead Area)	II	2.2	2.7	3.4	4.0	4.9	5.8	6.9	10.1
PENOBSCOT N (Millinocket Area)	II	2.2	2.6	3.2	3.8	4.7	5.6	6.5	9.5
PENOBSCOT S (Hudson Area)	II	2.3	2.7	3.4	3.9	4.9	5.7	6.7	9.7
PISCATAQUIS N (Chesuncook Area)	II	2.0	2.4	2.9	3.4	4.2	5.0	5.8	8.5
PISCATAQUIS S (Monson Area)	II	2.2	2.7	3.3	3.9	4.8	5.7	6.8	10.0
SAGADAHOC	III	2.6	3.2	3.9	4.6	5.7	6.7	7.8	11.4
SOMERSET N (Pittston Farm Area)	II	2.0	2.3	2.8	3.3	4.0	4.7	5.4	7.8
SOMERSET S (Solon Area)	II	2.3	2.7	3.4	3.9	4.9	5.7	6.7	9.8
WALDO	III	2.4	2.9	3.6	4.2	5.2	6.1	7.2	10.5
WASHINGTON	III	2.5	2.8	3.4	3.9	4.8	5.5	6.4	9.0
YORK	III	2.6	3.3	4.1	4.9	6.2	7.3	8.7	13.2

1 Use Type III rainfall for the towns of Brownfield, Buckfield, Denmark, Hartford, Hebron, Hiram, Oxford, and Porter.

Source: Data extracted by the Maine Department of Environmental Protection from the Northeast Regional Climate Center website (http://precip.eas.cornell.edu), Extreme Precipitation Tables. Data from this website was obtained from the National Oceanic and Atmospheric Administration's Regional Climate Center Program.
June 2014

POND — 4 — POND NUMBER

SUBCATCHMENT — 11 / 0.56 — SUBCATCHMENT NUMBER / SUBCATCHMENT ACREAGE

REACH — 50 — REACH NUMBER

Tc COMPONENTS — S = Sheet, SC = Shallow Concentrated, C = Channel

ROUTING DIRECTION

SOILS LEGEND

A Soils:
SCS Soils:
HISS Soils:

B Soils:
SCS Soils:
HISS Soils:

C Soils:
SCS Soils:
HISS Soils:

D Soils:
SCS Soils: LyC – Lyman Rock Outcrop
HISS Soils:

Subcatchment Boundaries Pre-Development

Subcatchment Boundaries Post-Development

SCS Soil Line

High Intensity Soil Line

Tc Flow Path & Direction Pre-Development

Tc Flow Path & Direction Post-Development

TAX MAP 44 LOT 38

PREPARED FOR:
SITE PLAN REVIEW
NOT FOR CONSTRUCTION
9/25/2020

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Engineers
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Surveyors
P.O. Box 100
South Berwick
Maine
03908
207-384-2550
www.civcon.com

NO.	REVISIONS	DATE	INT.
1			

RECORD OWNER:
JAMES M. PAOLINI

OWNER ADDRESS:
40 GODFREY COVE ROAD
YORK, MAINE 03909

PRE-DEVELOPMENT STORMWATER MANAGEMENT PLAN
TAX MAP 44 LOT 38
122 LONG SANDS ROAD
YORK, MAINE

PREPARED FOR:
JAMIE PAOLINI
CLIENT ADDRESS: 40 GODFREY COVE ROAD YORK, MAINE 03909

1"=20'
0' 20'

DATE: 09/25/2020
DRAWN BY: DRC
CHECKED BY: GRA
APPROVED BY: GRA

PRE-DEVELOPMENT STORMWATER MANAGEMENT PLAN

PROJECT NO: 19-314.00

D1

SHEET: 1 OF 2

COORDINATE FILE: J:\AAA\2019\1931400\CARLSON\SURVEY\POINTS\MSPCS83W-NAVD88.CRD

CADD FILE: J:\aaa\2019\1931400\Carlson\Engineering\1931400-SITEPLAN1.dwg

PLOT DATE: 2/14/2020

POND — 4 — POND NUMBER

SUBCATCHMENT — 11 / 0.56 — SUBCATCHMENT NUMBER / SUBCATCHMENT ACREAGE

REACH — 50 — REACH NUMBER

Tc COMPONENTS — S = Sheet, SC = Shallow Concentrated, C = Channel

ROUTING DIRECTION

SOILS LEGEND

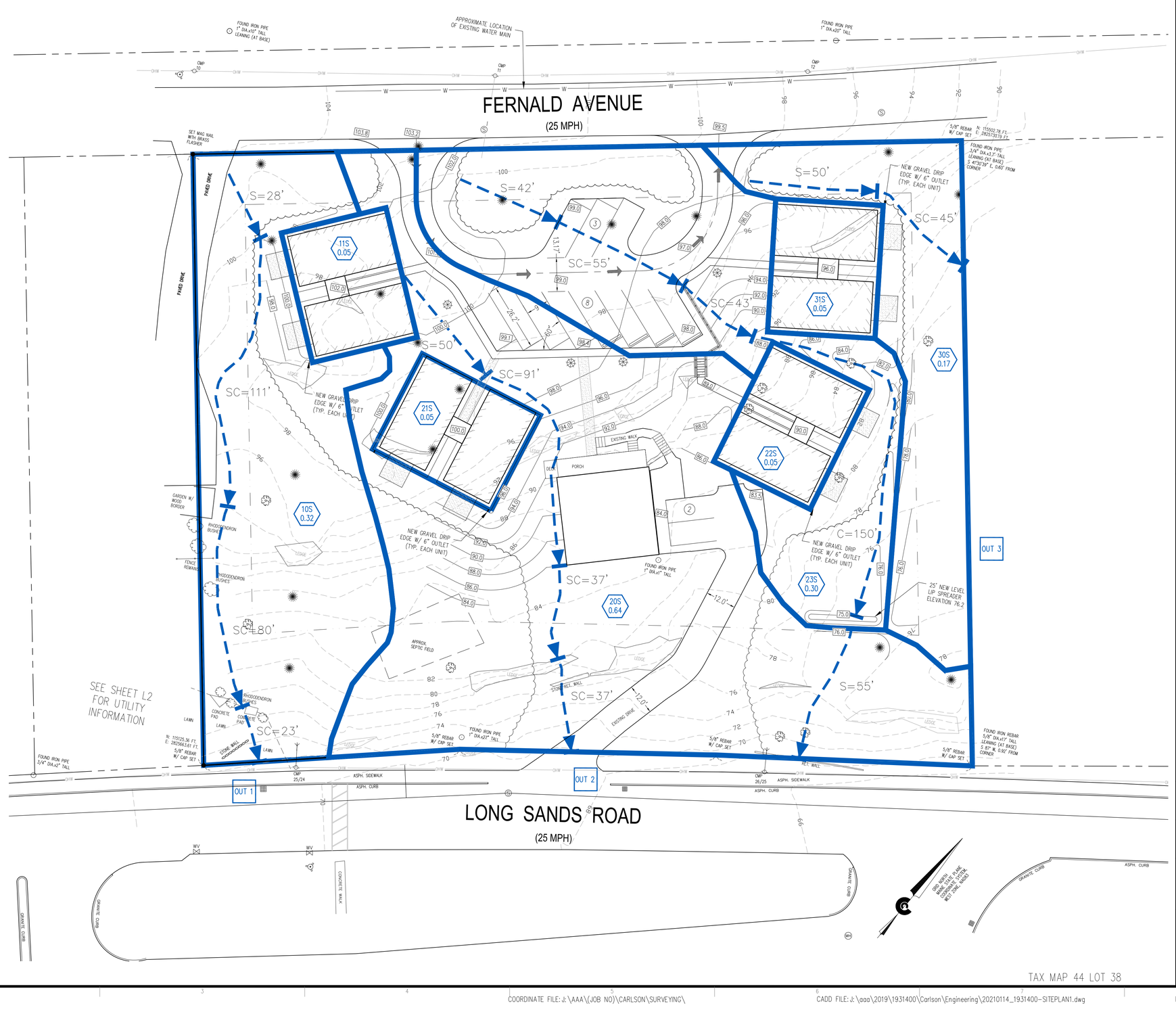
- A Soils: SCS Soils: HISS Soils:
- B Soils: SCS Soils: HISS Soils:
- C Soils: SCS Soils: HISS Soils:
- D Soils: SCS Soils: LyC – Lyman Rock Outcrop HISS Soils:

- Subcatchment Boundaries Pre-Development
- Subcatchment Boundaries Post-Development
- SCS Soil Line
- High Intensity Soil Line
- Tc Flow Path & Direction Pre-Development
- Tc Flow Path & Direction Post-Development

SOILS NOTE:
A HIGH INTENSITY SOIL STUDY WAS COMPLETED BY MICHAEL CUOMO, MAINE SOIL SCIENTIST #211, DATED NOVEMBER 6, 2020.

THE SOILS FOUND DURING THE EVALUATION ARE SOIL HYDROLOGIC GROUP D.

ON SITE SOIL PROFILES:
ROCK OUTCROP – ABRAM COMPLEX (RA)
LYMAN (LY)
MADELAND (MD)



PREPARED FOR:
SITE PLAN REVIEW
NOT FOR CONSTRUCTION
1/14/2021

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NO.	REVISIONS	INT.	DATE
2	PLANNING DEPARTMENT COMMENTS	DRC	01/14/21
1	ADD SOIL NOTE	GRA	11/25/20

RECORD OWNER:
JAMES M. PAOLINI

OWNER ADDRESS:
40 GODFREY COVE ROAD
YORK, MAINE 03909

POST-DEVELOPMENT STORMWATER MANAGEMENT PLAN
TAX MAP 44 LOT 38
122 LONG SANDS ROAD, YORK, MAINE

PREPARED FOR:
JAMIE PAOLINI
CLIENT ADDRESS: 40 GODFREY COVE ROAD YORK, MAINE 03909

1" = 20'
0' 20'

DATE: 09/25/2020
DRAWN BY: DRC
CHECKED BY: GRA
APPROVED BY: GRA

POST-DEVELOPMENT STORMWATER MANAGEMENT PLAN

PROJECT NO: 19-314.00

D2

SHEET: 2 OF 2

COORDINATE FILE: J:\AAA\(JOB NO)\CARLSON\SURVEYING\

CADD FILE: J:\aaa\2019\1931400\Carlson\Engineering\20210114_1931400-SITEPLAN1.dwg

PLOT DATE: 1/14/2021

Stormwater Maintenance/Inspection Plan

During the construction of parking and drainage facilities, maintenance of all erosion, sedimentation, and stormwater flow control structures and devices will be the responsibility of the Owner.

The Owner will be responsible for the continued maintenance of the stormwater treatment system.

During construction all erosion control devices and structures shall be checked weekly and after each "significant rainfall"**. Necessary repairs will be made to correct undermining or deterioration of the devices and/or structures.

The Owner shall maintain inspection logs (attached) of all stormwater and erosion control measures. The log shall reflect the dates of the inspections and describe actions taken. The log shall be kept on file for a minimum of 5 years and be made available to the Town upon request.

If invasive species are observed in any of the stormwater facilities, they shall be removed immediately. Any damage to the surface of the basins or filters shall be repaired and stabilized as soon as possible after disturbance.

The activities listed in the inspection log will be accomplished in early spring and in late fall.

A major storm event is classified as a rainfall exceeding 2.0 inches in a 24-hr storm event.

** Significant rainfall is 0.5" in 24 hr

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Sweeping

Paved surfaces shall be swept or vacuumed at least annually in the Spring to remove all Winter sand, and periodically during the year on an as-needed basis to minimize transportation of sediment during rainfall events. **Applicable to: All parking lots and travel ways on site.**

Roadways and Parking Surfaces				
	Spring	Fall or Yearly	After a Major Storm	Every 2– 5 Years
Clear accumulated winter sand in parking lots and along roadways	**X**			
Sweep pavement to remove sediment	**X**			
Clean-out the sediment within water bars or open top culverts	**X**			
Ensure that stormwater is not impeded by accumulations of material or false ditches in the shoulder	**X**			

Vegetated Areas

All areas of maintained lawn are to be inspected regularly for signs of erosions and channelization. Areas where erosion is occurring or areas of sparse growth shall be replanted and stabilized. Channelized flows from the eroded land shall be diverted to buffers or other areas able to withstand the high sediment load in the erosive runoff. **Applicable to: Lawn areas receiving/conveying flows in any storm event.**

Vegetated Areas				
	Spring	Fall or Yearly	After a Major Storm	Every 2– 5 Years
Inspect all slopes and embankments	**X**		**X**	
Replant bare areas or areas with sparse growth	**X**		**X**	
Armor areas with fill erosions with an appropriate lining or divert the erosive flows to on-site areas able to withstand concentrated flows	**X**		**X**	

Ditches, Swales and Culverts

Open swales and ditches need to be inspected on a monthly basis or after a major rainfall event to assure that debris or sediments do not reduce the effectiveness of the system. Debris needs to be removed at that time. Any sign of erosion or blockage shall be immediately repaired to assure a vigorous growth of vegetation for the stability of the structure and proper functioning.

Vegetated ditches should be mowed at least monthly during the growing season. Larger brush or trees must not be allowed to become established in the channel. Any areas where the vegetation fails will be subject to erosion and should be repaired and revegetated.

If sediment in culverts or piped drainage systems exceeds 20% of the diameter of the pipe, it should be removed. This may be accomplished by hydraulic flushing or any mechanical means; however, care should be taken to not flush the sediments into the retention/detention pond as it will reduce the pond's capacity and hasten the time when it must be cleaned. All pipes should be inspected on an annual basis.

Stormwater Channels				
	Spring	Fall or Yearly	After a Major Storm	Every 2– 5 Years
Inspect ditches, swales and other open stormwater channels	**X**	**X**	**X**	
Remove any obstructions and accumulated sediments or debris	**X**	**X**		
Control vegetated growth and woody vegetation		**X**		
Repair any erosion of the ditch lining		**X**		
Mow vegetated ditches		**X**		
Remove woody vegetation growing through riprap		**X**		
Repair any slumping side slopes	**X**	**X**		
Replace riprap where underlying filter fabric or underdrain gravel is showing or where stones have dislodge	**X**			**X**

Roof Dripline Filter

After each significant rainfall event, or at least monthly, the roof dripline filter shall be visually inspected to assure that debris and weeds have not accumulated at the surface. All impediments should be removed and disposed of properly.

On an annual basis, the roof dripline shall be inspected to ensure continued effectiveness. Over time the filter will clog and the stone/filter material will have to be removed and replaced or washed to clean out the accumulated sediment.

Roof Dripline Filter				
	Spring	Fall or Yearly	After a Major Storm	Every 2– 5 Years
Remove loose debris and weeds from the surface of the filter.	**X**	**X**	**X**	
Inspect outlets to maintain openings	**X**	**X**		

Level Lip Spreaders

Long term maintenance of the level spreader is essential to ensure its continued effectiveness. The following provisions should be followed; in the first year the level spreader should be inspected semi annually and following major storm events for any signs of channelization and should be immediately repaired. After the first year, annual inspection should be sufficient.

Inspect and remove debris in level spreader. Record weir elevation, and adjust if necessary per the direction of the design engineer. Inspect for bypass or undermining, repair as needed any channelization as it is occurring and remove sediment buildup to assure sheet flow conditions.

Inspections: At least once a year, the level spreader pool should be inspected for sand accumulation and debris that may reduce its capacity.

Sediment Removal: Sediment build-up within the swale should be removed when it has accumulated to approximately 25% of design volume or channel capacity. Dispose of the sediments appropriately.

Debris: As needed remove debris such as leaf litter, branches and tree growth from the spreader.

Level Spreader Replacement: The reconstruction of the level spreader may be necessary when sheet flow from the spreader becomes channeled.

Mowing: Filters with grass cover should be mowed no more than 2 times per growing season to maintain grass heights less than 12 inches.

Level Lip Spreader				
	Spring	Fall or Yearly	After a Major Storm	Every 2– 5 Years
The level spreader pool should be inspected for sand accumulation and debris that may reduce its capacity	**X**			
Sediment build-up within the swale should be removed when it has accumulated to approximately 25% of design volume or channel capacity				**X**
Remove debris such as leaf litter, branches and tree growth from the spreader	**X**	**X**		
The reconstruction of the level spreader may be necessary when sheet flow from the spreader becomes channeled into the buffer				**X**
Filters with grass cover should be mowed not more than 2 times per growing season				

Stormwater Maintenance

Long Sands Village - Elderly Homes Development

Maintenance Checklist

This log is intended to accompany the Stormwater Management Facilities Maintenance Plan for Long Sands Village Site Plan. The following items shall be checked, cleaned and maintained on regular basis as specified in the Maintenance Plan and as described in the table below. This log shall be kept on file for a minimum of five years and shall be available for review by the Town upon request. Qualified personnel familiar with drainage systems and soils shall perform all inspections.

Item	Maintenance Required & Frequency	Date Completed	Maintenance Personnel	Comments
Sweeping of Paved areas	Sweep annually in the Spring.			
Ditches, Swales and Culverts	Inspect after major rainfall event. Repair erosion or drainage immediately. Remove sediment if filtration times become greater than 12 hours. Clean culverts when sediment occupies more than 20% of pipe diameter.			
Vegetated Areas	Inspected regularly for signs of erosions and channelization. Areas where erosion is occurring or areas of sparse growth shall be replanted and stabilized.			
Roof Dripline Filter	Inspect after major rainfall event. Remove loose debris and weeds from the surface of the filter. Inspect outlet to maintain opening.			
Level Lip Spreader	Inspected regularly for signs of erosions and channelization. Remove debris and sediment buildup. Grass should be mowed not more than 2 times per growing season.			

Stormwater Management System

Long Sands Village - Elderly Homes Development

Inspection & Maintenance Log

BMP/System Component	Date Inspected	Inspector	Cleaning/Repair Needed *(List Items/Comments)*	Date of Cleaning/Repair	Performed By

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