Version: 4/28/2017

Project Name: PR&R PUD

Post-Construction Soil Depth and Quality Standard

	Feasibility (3.1)	Response	Attachment location
1	Have all areas of disturbance within the site that are subject to the Post-Construction Soil Depth and Quality Standard been identified on a plan sheet? This includes all disturbed areas on slopes ≤ 33% which are not covered by an impervious surface, part of a structural stormwater treatment practice, or engineered as structural fill once development is complete.	◉ Yes ○ No	SW-4
2	Have all areas that will not be disturbed and areas exempt from the Standard, including the reason for the exemtion, been identified on a plan sheet?	◉ Yes ○ No	SW-4

	Treatment (3.2)	Attachment Location
3	Is the minimum topsoil depth specified as:	
	☑ 4 inches	SW-6/8
	☐ The depth of the 0 and A horizons on the NRCS Official Soil Series Description of the native mapped soils (provide documentation)	
4	Which of the following methods are utilized to meet soil quality requirements for this site?	
	☐ Option 1: Leave undisturbed native vegetation and soil, and protect from compaction during construction.	
	☐ Option 2: Amend existing site topsoil or subsoil in place.	
	☑ Option 3: Remove and stockpile existing topsoil during grading.	SW-4
	☐ Option 4: Import topsoil mix, or other materials for mixing, including compost, of sufficient organic content and depth.	

		Response	Attachment location
5	Does the site layout retain the duff layer and native topsoil in an undisturbed state to the maximum extent practicable?	◉ Yes ○ No	SW-4
6	Is the organic matter content of the topsoil layer specified to be at least 4%?	◉ Yes ○ No	SW-6/8
7	Is compost or other materials used to amend soils specified to have a C:N ratio below 25:1?	○ Yes ○ No	N/A
8	Is it specified that compost shall meet the definition of "compost" or meet the contaminant standards in the Vermont Solid Waste Management Rules?	○ Yes ○ No	N/A
9	If Exceptional Quality (EQ) biosolids are used as a soil amendment, do they comprise no more than 35% of the total volume of soil, and is it specifed that they be well mixed before or during application?	○ Yes ○ No	N/A

Vegetation and Landscaping (3.3)	Response	Attachment location

	Does the application include a site-specific plan for soil management that:		
10	Identifies all areas on the site subject to the standard?	(●) Yes ( ) No	SW-4
11	Includes construction details and notes on the various methods the contractor may use to meet he Standard?	(●) Yes ( ) No	SW-6/8
12	Includes a statement that soil depth and quality shall be established towards the end of construction, and once established, be protected from compaction?	(●) Yes ( ) No	SW-6/8
13	Includes instructions for contractor verification of the Standard, including a sampling scheme that includes nine 8-inch deep test holes per acre of area subject to the Standard?	(●) Yes ( ) No	SW-4 & SW6/8
14	Instructions that test holes shall be excavated using only a shoven driven soley by the inspector's weight and shall be at least 50 feet apart from each other?	(●) Yes ( ) No	SW-6/8
15	Instructions to establish dense an vigorous vegeative cover over turf areas?	(●) Yes ( ) No	SW-6/8

Attachment location: Indicate the specific location (i.e. appendix, page, plan sheet) where the requisite support documentation has been provided within the application.

Version: 11/30/2020

Project Name:	**PR&R PUD**
Discharge Point:	**S/N 001**
Infiltration Practice #	**1**

Infiltration (4.3.3)

	Practice Drainage Area	For Permit Coverage	Not for Permit Coverage	Total to Practice
1	Total Area (acres)	3.780	0.000	3.780
2	New Impervious (acres)	0.280	0.000	0.280
3	Redeveloped Impervious	0.000	0.000	0.000
		WQ_V for credit	WQ_V not for credit	Total WQ_V
4	WQ_V to practice	0.0368	0.0000	0.0368

Modified CN for WQ (1.0") storm: 82

5 Design Volume for Infiltration ($T_{V)}$): 0.1920 ← Tv value to enter on the Standards Compliance Workbook for this practice

6 Practice Type:
- (●) Infiltration Basin
- ( ) Infiltration Trench
- ( ) Infiltration Chambers
- ( ) Drywell(s)

Note: If the practice is designed to infiltrate the WQ_V, then $T_V = WQ_V$. Designers may use the Practice Drainage Area Runoff Calculator (second tab) for calculation of practice-specific runoff volumes for other treatment standards. Sizing of the filter bed area/swale bottom need to consider the desired treatment volume (see treatment section). Some design requirements will change based on the size of storm the practice is designed to treat.

** Questions preceded by an asterix (*) may change based on previously entered values*

	Feasibility (4.3.3.1)	**Response**	**Attachment location**
7	Has the infiltration rate (fc) of the underlying soil been confirmed to be at least 0.2 inches per hour by the soil testing requirements in Section 4.3.3.2?	(●) Yes ( ) No	Infiltration Test Results
8*	Is the seasonal high groundwater table (SHGWT) separated at least three (3) feet vertically from the bottom of the practice?	(●) Yes ( ) No	Soils Investigation Results
9	Has a groundwater mounding analysis been performed if the practice is designed to infiltrate >1 year storm and the SHGWT <4 feet?	( ) Yes (●) No	Soils Investigation Results
10	Have the proper setback requirements for groundwater source protection been observed? (Section 4.3.3.1)	(●) Yes ( ) No	Plan Sheet SW-2
11	Has the practice been placed so that it will not cause intrusion problems for down-gradient structures? (Section 4.3.3.1)	(●) Yes ( ) No	Plan Sheet SW-2
12	Is the site free from subsurface contamination or prior approval obtained from the Agency? (If approval is required based on prior contamination, include	(●) Yes ( ) No	N/A
13*	Is the basin designed with side slopes of 2:1 or flatter?	(●) Yes ( ) No	Plan Sheet SW-3

	Conveyance (4.3.3.2)	**Response**	**Attachment location**

14	Have the outfalls and the conveyance to the discharge point been designed/protected to avoid erosive velocities?	(●) Yes ( ) No	Plan Sheet SW-3
15	Is the practice designed to completely dewater the treatment volume (T_V) within 48 hours after the storm event?	(●) Yes ( ) No	IB1 Proposed HydroCAD modeling
16	If the practice is designed to infiltrate <1 year storm and runoff is delivered by the main conveyance system, has it been designed as an off-line practice?	(●) Yes ( ) No	N/A

	Pre-Treatment (4.3.3.3)		**Response**	**Attachment location**
17	Has pretreatment been provided for non-rooftop runoff?		(●) Yes ( ) No	Plan Sheet SW-2
18	What type of pretreatment is being used?	[✓] Swale [ ] Forebay [ ] Proprietary [ ] Filter Strip [ ] Deep Sump Catch Basins		Plan Sheet SW-2
19*			( ) ≤ 2 in/hr ( ) > 2 in/hr	
20*			( ) Yes ( ) No	
21*			( ) Yes ( ) No	

	Treatment (4.3.2.4)		**Response**	**Attachment location**
22	Has direct access been provided to the practice for maintenance and rehabilitation?		(●) Yes ( ) No	Plan Sheet SW-2
23*			( ) Yes ( ) No	
24	What is the physical storage volume up to the overflow?	**(ac-ft)**	0.232	**Enter this on the eNOI**
25	What is the treatment volume provided by the STP?	**T_V (ac-ft)**	0.192	IB1 Proposed HydroCAD modeling

Treatment Volume (T_V) for infiltration practices may be calculated using the equations provided as design guidance in Section 4.3.3.5 OR by demonstrating infiltration of the T_V using TR-20 or an approved equavalent.

† **Enter this value on the Standards**

	Landscaping (4.3.2.5)	**Response**	**Attachment location**
26	Does the site plan specify a landscaping plan that ensures dense and vigorous vegetation over the contributing pervious drainage areas and the practice?	(●) Yes ( ) No	Plan Sheet SW-4

Attachment location: Indicate the specific location (i.e. appendix, page, plan sheet) where the requisite support documentation has been provided within the application.

Version: 11/30/2020

Project Name:	**PR&R PUD**
Discharge Point:	**S/N 001**
Infiltration Practice #	**2**

Infiltration (4.3.3)

	Practice Drainage Area	For Permit Coverage	Not for Permit Coverage	Total to Practice
1	Total Area (acres)	12.740	0.000	12.740
2	New Impervious (acres)	0.700	0.000	0.700
3	Redeveloped Impervious	0.000	0.000	0.000
		WQ_V for credit	WQ_V not for credit	Total WQ_V
4	WQ_V to practice	0.1056	0.0000	0.1056

Modified CN for WQ (1.0") storm: 81

5 Design Volume for Infiltration ($T_{V)}$: 0.3020 ← Tv value to enter on the Standards Compliance Workbook for this practice

6 Practice Type:
- (●) Infiltration Basin
- ( ) Infiltration Trench
- ( ) Infiltration Chambers
- ( ) Drywell(s)

Note: If the practice is designed to infiltrate the WQ_V, then $T_V = WQ_V$. Designers may use the Practice Drainage Area Runoff Calculator (second tab) for calculation of practice-specific runoff volumes for other treatment standards. Sizing of the filter bed area/swale bottom need to consider the desired treatment volume (see treatment section). Some design requirements will change based on the size of storm the practice is designed to treat.

** Questions preceded by an asterix (*) may change based on previously entered values*

	Feasibility (4.3.3.1)	**Response**	**Attachment location**
7	Has the infiltration rate (fc) of the underlying soil been confirmed to be at least 0.2 inches per hour by the soil testing requirements in Section 4.3.3.2?	(●) Yes ( ) No	Infiltration Test Results
8*	Is the seasonal high groundwater table (SHGWT) separated at least three (3) feet vertically from the bottom of the practice?	(●) Yes ( ) No	Soils Investigation Results
9	Has a groundwater mounding analysis been performed if the practice is designed to infiltrate >1 year storm and the SHGWT <4 feet?	( ) Yes (●) No	Soils Investigation Results
10	Have the proper setback requirements for groundwater source protection been observed? (Section 4.3.3.1)	(●) Yes ( ) No	Plan Sheet SW-2
11	Has the practice been placed so that it will not cause intrusion problems for down-gradient structures? (Section 4.3.3.1)	(●) Yes ( ) No	Plan Sheet SW-2
12	Is the site free from subsurface contamination or prior approval obtained from the Agency? (If approval is required based on prior contamination, include	(●) Yes ( ) No	N/A
13*	Is the basin designed with side slopes of 2:1 or flatter?	(●) Yes ( ) No	Plan Sheet SW-3

	Conveyance (4.3.3.2)	**Response**	**Attachment location**

14	Have the outfalls and the conveyance to the discharge point been designed/protected to avoid erosive velocities?	(●) Yes ( ) No	Plan Sheet SW-3
15	Is the practice designed to completely dewater the treatment volume (T_V) within 48 hours after the storm event?	(●) Yes ( ) No	IB2 Proposed HydroCAD modeling
16	If the practice is designed to infiltrate <1 year storm and runoff is delivered by the main conveyance system, has it been designed as an off-line practice?	(●) Yes ( ) No	N/A

	Pre-Treatment (4.3.3.3)		**Response**	**Attachment location**
17	Has pretreatment been provided for non-rooftop runoff?		(●) Yes ( ) No	Plan Sheet SW-2
18	What type of pretreatment is being used?	[✓] Swale [ ] Forebay [ ] Proprietary [ ] Filter Strip [ ] Deep Sump Catch Basins		Plan Sheet SW-2
19*			( ) ≤ 2 in/hr ( ) > 2 in/hr	
20*			( ) Yes ( ) No	
21*			( ) Yes ( ) No	

	Treatment (4.3.2.4)		**Response**	**Attachment location**
22	Has direct access been provided to the practice for maintenance and rehabilitation?		(●) Yes ( ) No	Plan Sheet SW-2
23*			( ) Yes ( ) No	
24	What is the physical storage volume up to the overflow?	**(ac-ft)**	0.366	**Enter this on the eNOI**
25	What is the treatment volume provided by the STP?	**T_V (ac-ft)**	0.302	IB2 Proposed HydroCAD modeling

Treatment Volume (T_V) for infiltration practices may be calculated using the equations provided as design guidance in Section 4.3.3.5 OR by demonstrating infiltration of the T_V using TR-20 or an approved equavalent.

† **Enter this value on the Standards**

	Landscaping (4.3.2.5)	**Response**	**Attachment location**
26	Does the site plan specify a landscaping plan that ensures dense and vigorous vegetation over the contributing pervious drainage areas and the practice?	(●) Yes ( ) No	Plan Sheet SW-4

Attachment location: Indicate the specific location (i.e. appendix, page, plan sheet) where the requisite support documentation has been provided within the application.

Extreme Flood Protection Standard Waiver Worksheet

Fill out this worksheet for each discharge point in which use of this waiver is sought.

Extreme Flood Protection Standard (Q_{P100}) Waiver (*check only one*)**:**

☐ 1. A site that has a direct discharge to waters with a drainage area equal to or greater than or equal to 10 square miles and that is less than 5% of the watershed area at the site's upstream boundary.

Name of Waters at Discharge Point:	
Drainage Area of Waters at Discharge Point (square miles):	

☒ 2. The impervious on site or otherwise associated within a common plan of development, constructed after 2002, is less than 10 acres.

☒ **Yes** ☐ **No**

☐ 3. A downstream analysis was completed, pursuant to Section **Error! Reference source not found.** of the 2017 VSMM, that indicated extreme flood control is not necessary for the site.

Has adequate conveyance from the site to the discharge point been verified?	☐ **Yes**	☐ **No**
Has supporting information (e.g. narrative description, calculations, modeling) for the completed downstream analysis been included with the application?	☐ **Yes**	☐ **No**

For a project that has more than one discharge point and that discharges to different receiving waters, waiver eligibility shall be determined on a "per receiving water" basis. Receiving waters are considered separate if the drainage area at their downstream point of confluence is greater than 10 square miles.

For example, if discharge point S/N 001 drains directly to the Winooski River (greater than 10 square miles), but discharge point S/N 002 drains to a small tributary of the Winooski River, then S/N 001 could be waived from the Extreme Flood Protection Treatment Standard using Waiver 2, but S/N 002 could not. However, S/N002 may be still eligible for Waiver 1.

For additional information please go to the 2017 Vermont Stormwater Management Manual, Sections 2.2.7 and 2.5.