QDOR Online Review Forum (ORF)
Text for Instructions Pop Ups

Text to be placed at the top of the data input/review pages:

The data entered herein shall be subject to the review procedure(s) and confidentiality as described in the QDOR Guidance Manual. Data shall be maintained within the QDOR database for the period of time the QDOR program is maintained. All reviewers are subject to the limitations described in the confidentiality agreement required prior to reviewing data.

Section Instructions to be put in pop-up from Instructions link:

Section 1a – Material Data

Data presented in Section 1a was supplied to ECTC administration to initiate application process. If errors are present in Section 1a, please inform ECTC administration for corrections prior to submitting application.

QDOR/ORF Specific Definitions:

Submittal Type – All QDOR applications are reviewed to determine conformance with the QDOR standards. In the event an applicant requires the addition or clarification of information, an application may be re-opened. Any application can be re-opened, approved or denied. Thus, the Submittal Type field is intended to record whether the application is a first time submittal or re-opened record.

Unique Material – Section 3.1 of the QDOR Guidance Manual defines a Unique Material. Simply, a Unique Material is a product manufactured to a given set of specifications that is unique in producer and properties. All Unique Materials must undergo the full review process. The Unique Material field is intended to contain information to specify if the product is considered a Unique Material or not. If the product is not a Unique Material, then an identical material, produced by the same manufacturer must be maintained in the database prior to submittal of the Non-Unique Material.

Parent Material – The product maintained within the QDOR database for a Non-Unique Material Submittal.

Material Manufacturer – The Material Manufacturer field is supplied to record the producer of the submitted product. In the case of a Unique Material, the submitting agency must be the producer. In the case of a Non-Unique Material, the Material Manufacturer may be different from the submitting agency.

Section 1b – Locations of Manufacture

Data presented in Section 1b was supplied to ECTC administration to initiate application process. If errors are present in Section 1b, please inform ECTC administration for corrections prior to submitting application. Within section 1b, four fields are provided to submit individual addresses of locations of manufacture. Input the full address of each facility in a single field. If less than four locations produce the submitted material, additional fields may be left blank.

Section 1c – Material Description

Data presented in Section 1c shall be supplied by the submitting agency. Several data fields are provided to record qualitative information for the submitted product. The fields and data to be provided are as follows:

Number of Nets – Total number of nets present in the final product to include planar, three dimensional, synthetic or biodegradable. Whether the net is utilized to confine the matrix or other purpose, report summation of all nets in the Number of Nets field.

Bonding Method – The Bonding Method field allows for reporting the method of bonding the material (i.e. the mechanism that provides the material sufficient integrity to maintain shape and durability). Typically, RECPs are stitched or glued, however, any other method may be recorded in the Bonding Method field.

Matrix Type – The Matrix Type field is provided to record the type of loose fibers utilized in the final product. Although a product may utilize synthetic or organic fibers in a loose or stabilized matrix, a simple description of the fill material of the product should be entered in the Matrix Type field.

Longevity Classification – The Longevity Classification field is provided to record the manufacturer's recommendation for the longevity classification of the material as per the ECTC classification system. ECTC specifications designate the following classifications:

- Ultra Short Term (45 – 90 Days)
- Temporary (~12 Months)
- Extended Term (~24 Months)
- Long Term (~36 Months)
- Permanent (~36 Months)

Published Longevity – The Specified Longevity field provides for recording of the manufacturers published value of longevity. This value should fall within the ECTC classification values of the previous field, however, provide a more precise estimation of longevity. For example, if the submitted product has a longevity of thirty months, the Longevity Classification would be twenty-four months and the Published Longevity would be thirty months.

Section 1d – Specified Index Properties

Section 1d provides for recording of the principle index properties of the properties. The submitting agency should enter the typical values of the product for comparison. All index properties from performance/conformance testing shall be compared to the values listed in Section 1d to determine if the material tested is within reasonable variance of the specified values. Values reported should be consistent in the units and test methods shown.

Section 1e – Application Details

Section 1e provides for miscellaneous data recording. The following three data entry fields are provided:

All manufacturers of QDOR approved materials and representatives of Non-Unique materials are bound to the code of ethics as defined by the QDOR Guidance Manual, Section 4.3.1. By assigning a value of Yes and confirming in the subsequent dialog box, the submitting agent is agreeing to abide by the code of ethics within the QDOR Guidance Manual and the privileges and responsibilities thereof. Applications may not be approved until a value of yes is provided and confirmed.

The Intended Application Type field is provided to describe the intention of the submitting agent as to the type of data provided. Performance data may be provided for slope installations, channel installations or slope and channel installations. The submitter should select the appropriate entry within the pull-down menu.

The Intended Application Level field is provided to describe the level of conformance to the QDOR specifications the submittal agency is expecting. Various levels of classification are possible within the QDOR database; Section 4.5 of the QDOR Guidance Manual describes the two levels of application. The submitter should choose Gold of Silver from the pull-down menu. Submittals approved for Gold status remain listed for as long as the cyclical criteria are met; submittals approved as Silver status remain listed until January 1st, 2011 if not upgraded to Gold status.

Section 2a – Laboratory Information (Rainfall Performance Testing)

Section 2a is provided to record basic information regarding the laboratory where Rainfall Performance testing was conducted. All testing for a material must be conducted at the same facility, however, it is not necessary to perform all testing sequentially (test repetitions may be performed at various times).

Section 2b – Slope Dimensions

Section 2b is provided to record the dimensions of the test plot. The LS Factor should be determined as described in the QDOR Guidance Manual, Section 6.2.1.

Section 2c – Soil Data

Section 2c is provided to record the properties of the test soil used. Consistent soil should be used for unprotected and protected conditions. Test methods required for the determination of soil data are provided in Section 6.1.3 of the QDOR Guidance Manual.

Section 2d – Unprotected Slope Testing (Recent and Overall Data)

Section 2d is provided to record the parameters of unprotected (bare soil) testing as the reference condition of Rainfall Performance testing, specifically the determination of C Factor. A table of fields is provided for systematic entry of test data relating to the rainfall applied, time of application, consistency of application test erosivity applied and total erosivity applied. It is not specifically necessary to enter data for all nine rainfall events as provided. Rather, Section 6.1.1 of the QDOR Guidance Manual

provides specifications for the classification of a submittal as Class I (Gold) or Class II (Silver) with respect to number of rainfall events characterizing the erosion generated in unprotected conditions. Further, Section 6 of the QDOR Guidance Manual provides methodology and procedures for the determination and computation of values required as input in the data table of Section 2d.

In addition to the data table provided in Section 2d, several additional data values should be entered. The following provides guidance on data entry for the additional fields:

- Date – Enter the latest date of bare soil testing.
- Wind Speed – Enter the average wind speed recorded for all of the rainfall events reported.
- LR Slope A vs. R*LS – Enter the slope of the linear regression function defining the trend between gross sediment yield (A) and the product of total rainfall erosivity (R) and LS Factor. Section 6.2.3.1 of the QDOR Guidance Manual presents the methodology for computations requisite for data entry in the LR Slope A vs. R*LS field.
- Representative K Factor – Determine and enter a representative K Factor (the inherent susceptibility of the soil to be eroded). Section 6.2.3.1 of the QDOR Guidance Manual provides the methodology for computation and determination of the representative K Factor.
- Temperature – Enter the average temperature for all rainfall events reported.

Section 2e (1) –Protected Condition, Test Repetition 1

Section 2e (1) is provided to record the parameters of the first repetition of protected soil testing (Rainfall Performance Testing). Within this section, a series of individual input fields are provide in addition to the performance data table.

Initially, a series of four fields are presented to record the index properties of the product. The values entered in the fields for Tensile Strength, Mass per Unit Area, Thickness and Light Penetration should be representative of values determined on material used in performance testing. For example, rolls used for rainfall performance testing should be sampled to determine these properties and those values reported in Section 2e (1).

Rainfall performance data for the first repetition of the protected condition should be entered within the table provided in Section 2e (1). This table is similar to Section 2d for the unprotected condition. A table of fields is provided for systematic entry of test data relating to the rainfall applied, time of application, consistency of application test erosivity applied and total erosivity applied. However, rows for only five rainfall events are provided. It is not specifically necessary to enter data for all five rainfall events. Section 6.1.1 of the QDOR Guidance Manual provides specifications for classification of data as Class I (Gold) or Class II (Silver) with respect to the number of rainfall events and test repetitions for rainfall performance testing. Further, Section 6 of the QDOR Guidance Manual provides methodology and procedures for the determination and computation of values required as input in the data table of Section 2e (1).

In addition to the data table provided in Section 2e (1), several additional data values should be entered. The following provides guidance on data entry for the additional fields:

- Date – Enter the latest date of protected soil testing.

- Wind Speed – Enter the average wind speed recorded for all of the rainfall events reported.
- LR Slope A vs. R*LS – Enter the slope of the linear regression function defining the trend between gross sediment yield (A) and the product of total rainfall erosivity (R) and LS Factor. Section 6.2.3.1 of the QDOR Guidance Manual presents the methodology for computations requisite for data entry in the LR Slope A vs. R*LS field.
- Temperature – Enter the average temperature for all rainfall events reported.

Section 2e (2) –Protected Condition, Test Repetition 2

Section 2e (2) is provided to record the parameters of the second repetition of protected soil testing (Rainfall Performance Testing). Within this section, a series of individual input fields are provide in addition to the performance data table.

Initially, a series of four fields are presented to record the index properties of the product. The values entered in the fields for Tensile Strength, Mass per Unit Area, Thickness and Light Penetration should be representative of values determined on material used in performance testing. For example, rolls used for rainfall performance testing should be sampled to determine these properties and those values reported in Section 2e (2).

Rainfall performance data for the first repetition of the protected condition should be entered within the table provided in Section 2e (1). This table is similar to Section 2d for the unprotected condition. A table of fields is provided for systematic entry of test data relating to the rainfall applied, time of application, consistency of application test erosivity applied and total erosivity applied. However, rows for only five rainfall events are provided. It is not specifically necessary to enter data for all five rainfall events. Section 6.1.1 of the QDOR Guidance Manual provides specifications for classification of data as Class I (Gold) or Class II (Silver) with respect to the number of rainfall events and test repetitions for rainfall performance testing. Further, Section 6 of the QDOR Guidance Manual provides methodology and procedures for the determination and computation of values required as input in the data table of Section 2e (2).

In addition to the data table provided in Section 2e (2), several additional data values should be entered. The following provides guidance on data entry for the additional fields:

- Date – Enter the latest date of protected soil testing.
- Wind Speed – Enter the average wind speed recorded for all of the rainfall events reported.
- LR Slope A vs. R*LS – Enter the slope of the linear regression function defining the trend between gross sediment yield (A) and the product of total rainfall erosivity (R) and LS Factor. Section 6.2.3.1 of the QDOR Guidance Manual presents the methodology for computations requisite for data entry in the LR Slope A vs. R*LS field.
- Temperature – Enter the average temperature for all rainfall events reported.

Section 2e (3) –Protected Condition, Test Repetition 3

Section 2e (3) is provided to record the parameters of the second repetition of protected soil testing (Rainfall Performance Testing). Within this section, a series of individual input fields are provide in addition to the performance data table.

Initially, a series of four fields are presented to record the index properties of the product. The values entered in the fields for Tensile Strength, Mass per Unit Area, Thickness and Light Penetration should be representative of values determined on material used in performance testing. For example, rolls used for rainfall performance testing should be sampled to determine these properties and those values reported in Section 2e (3).

Rainfall performance data for the first repetition of the protected condition should be entered within the table provided in Section 2e (1). This table is similar to Section 2d for the unprotected condition. A table of fields is provided for systematic entry of test data relating to the rainfall applied, time of application, consistency of application test erosivity applied and total erosivity applied. However, rows for only five rainfall events are provided. It is not specifically necessary to enter data for all five rainfall events. Section 6.1.1 of the QDOR Guidance Manual provides specifications for classification of data as Class I (Gold) or Class II (Silver) with respect to the number of rainfall events and test repetitions for rainfall performance testing. Further, Section 6 of the QDOR Guidance Manual provides methodology and procedures for the determination and computation of values required as input in the data table of Section 2e (3).

In addition to the data table provided in Section 2e (3), several additional data values should be entered. The following provides guidance on data entry for the additional fields:

- Date – Enter the latest date of protected soil testing.
- Wind Speed – Enter the average wind speed recorded for all of the rainfall events reported.
- LR Slope A vs. R*LS – Enter the slope of the linear regression function defining the trend between gross sediment yield (A) and the product of total rainfall erosivity (R) and LS Factor. Section 6.2.3.1 of the QDOR Guidance Manual presents the methodology for computations requisite for data entry in the LR Slope A vs. R*LS field.
- Temperature – Enter the average temperature for all rainfall events reported.

Section 3a – Laboratory Data (Channelized Performance Testing)

Section 3a is provided to record basic information regarding the laboratory where Channelized Performance testing was conducted. All testing for a material must be conducted at the same facility, however, it is not necessary to perform all testing sequentially (test repetitions may be performed at various times).

Section 3b – Channel Dimensions

Section 3b is provided to record the dimensions of the test channel. Section 7.1.3 of the QDOR Guidance Manual demonstrates the determination of the channel dimensions to be entered in Section 3b.

Section 3c – Soil Data

Section 3c is provided to record the properties of the test soil used. Consistent soil should be used for unprotected and protected conditions. Test methods required for the determination of soil data are provided in Section 7.1.4 of the QDOR Guidance Manual.

Section 3d – Unprotected Soil Testing

Section 3d is provided to record the parameters of unprotected (bare soil) testing as the reference condition of channel performance testing. A table of fields is provided for systematic entry of test data relating to the discharge, length of control volume (reach of data consideration start and stop), bed slope, average flow depth, cross section area, average cross section velocity, slope of the energy grade line, soil loss and Manning's n. It is not specifically necessary to enter data for all eight flow events as provided. Rather, Section 7.1.1 of the QDOR Guidance Manual provides specifications for the classification of a submittal as Class I (Gold) or Class II (Silver) with respect to number of flow events characterizing the erosion generated in unprotected conditions. Further, Section 7.2.11 of the QDOR Guidance Manual provides methodology and procedures for the determination and computation of values required as input in the data table of Section 3d.

QDOR/ORF Specific Definitions:

Discharge – The volumetric rate of flow, typically measured by hydraulic control or flow meter. The discharge is symbolized by the letter Q and is reported in units of cubic feet per second (cfs). Enter the average discharge recorded over the duration of the flow event.

Control Volume Start/Stop – The station along the longitudinal axis of the test channel where data analysis is considered. Hydraulic analysis is conducted over a reach of consideration, termed a control volume. Proper selection of a control volume aids in maintaining data consistency with respect to other flow events and minimize the influence of outlier data points. Section 7.2.10 of the QDOR Guidance Manual provides insight and specifications into the selection of a control volume. Enter the distance, measured from the initiation of the test channel to the Start of the control volume and the end of the control volume (two values, presented in ft).

Bed Slope – The bed slope is a quantification of the change in elevation per unit of channel length, expressed as a decimal (percentage). This value quantifies the test condition in terms of the potential energy available over the length of the test section due to change in elevation. Linear regression of survey data typically provides the most representative quantification. Enter the bed slope of the Control Volume in the Bed Slope field as a decimal (i.e. 5.1% = 0.051).

Average Flow Depth – Average flow depth is the quantification of the average depth of flow over the control volume. Flow depth is the distance from the bed surface to the water surface, normal to the bed surface. The average of the flow depth at each data acquisition station over within the control volume is the average flow depth, expressed in ft. Section 7.5.11.3 of the QDOR Guidance Manual depicts the computation of flow depth.

Cross Section Area – Cross section area is a quantification of the planar area occupied by the flow, confined by the channel boundaries, normal to the bed. Section 7.2.5 of the QDOR Guidance Manual

describes the computation of the cross section area for a station within the control volume. The average of the cross section area at all data acquisition stations within the control volume should be entered, expressed in ft^2.

Cross Section Average Velocity – Cross section average velocity is the quantification of the speed of flow in the direction of flow, expressed in ft/s. Section 7.2.11.5 of the QDOR Guidance Manual provides explanation of the computation of the cross section average velocity. The average of computed cross section average velocity values at each data acquisition station within the control volume should be reported.

Slope of the Energy Grade Line – Elevation of the energy grade line at a give data acquisition station is determined as the summation of energy head at the station. The change in energy with respect to horizontal distance traveled defines the slope of the energy grade line. Section 7.2.11.2 of the QDOR Guidance Manual defines the computation of the slope of the energy grade line. Enter the slope of the sum of least squares optimized linear regression in the table, expressed as a decimal (i.e. 0.051).

Soil Loss – Enter the cumulative soil loss, expressed in inches, determined as the Clopper Soil Loss Index as described in Section 7.2.11.8 of the QDOR Guidance Manual. The soil loss should be considered over the entire control volume, averaging all measurements.

Manning's n – Manning's n is an empirical quantification of the resistance to flow. Given the measured hydraulic and geometric properties of the flow event, a value of Manning's n can be computed. Section 7.2.11.6 of the QDOR Guidance Manual provides explanation on the computation of Manning's n. A representative value for the flow event and test should be entered in the table. For the purposes of the QDOR database, Manning's n is considered to be unitless.

In addition to the data table provided in Section 3d, several additional data values should be entered. The following provides guidance on data entry for the additional fields:

- Date – Enter the latest date of bare soil testing.
- In Place Compaction – Enter the in place density, expressed as a percentage of optimum dry density by standard proctor, as described in Section 7.1.4 of the QDOR Guidance Manual.
- Temperature – Enter the average temperature for all rainfall events reported.
- Run Duration – Each flow event should be conveyed for an identical length of time. Enter the length of time the installation is exposed to the target discharge.
- Plot Shear Stress vs. CSLI Type – Enter the type of regression function used to describe the relationship between shear stress and soil loss. The different types and usage of the regression function is described by Section 7.2.12 of the QDOR Guidance Manual.
- Plot Shear Stress vs. CSLI R^2 – Enter the value of the coefficient of determination for the plot of shear stress versus soil loss. Section 7.2.12 of the QDOR Guidance Manual describes the methodology to report the coefficient of determination.
- Critical Shear Stress – Report the shear stress, as determined by the regression function, at 0.5 inches of soil loss. Section 7.2.12 of the QDOR Guidance Manual describes the determination of critical shear stress.

Section 3e – Protected, Unvegetated Soil Testing (Repeat Text for Sections 3e (1), 3e (2) and 3e (3))

Section 3e (3e (1), 3e (2) and 3e (3)) is provided to record the parameters of protected (unvegetated RECP) testing to determine the performance threshold of the material. A series of three tables and associated fields is provided for systematic entry of test data relating to the discharge, length of control volume (reach of data consideration start and stop), bed slope, average flow depth, cross section area, average cross section velocity, slope of the energy grade line, soil loss and Manning's n. It is not specifically necessary to enter data for all eight flow events or all three test repetitions as provided. Rather, Section 7.1.1 of the QDOR Guidance Manual provide specifications for the classification of a submittal as Class I (Gold) or Class II (Silver) with respect to number of flow events and test replicates. Further, Section 7.2.11 of the QDOR Guidance Manual provides methodology and procedures for the determination and computation of values required as input in the data table of Section 3e.

Initially, a series of four fields are presented to record the index properties of the product. The values entered in the fields for Tensile Strength, Mass per Unit Area, Thickness and Light Penetration should be representative of values determined on material used in performance testing. For example, rolls used for unvegetated channel performance testing should be sampled to determine these properties and those values reported in Section 3e (1), 3e (2) and 3e (3) to verify the material utilized for performance testing is typical with respect to the manufacturing specifications.

QDOR/ORF Specific Definitions:

Discharge – The volumetric rate of flow, typically measured by hydraulic control or flow meter. The discharge is symbolized by the letter Q and is reported in units of cubic feet per second (cfs). Enter the average discharge recorded over the duration of the flow event.

Control Volume Start/Stop – The station along the longitudinal axis of the test channel where data analysis is considered. Hydraulic analysis is conducted over a reach of consideration, termed a control volume. Proper selection of a control volume aids in maintaining data consistency with respect to other flow events and minimize the influence of outlier data points. Section 7.2.10 of the QDOR Guidance Manual provides insight and specifications into the selection of a control volume. Enter the distance, measured from the initiation of the test channel to the Start of the control volume and the end of the control volume (two values, presented in ft).

Bed Slope – The bed slope is a quantification of the change in elevation per unit of channel length, expressed as a decimal (percentage). This value quantifies the test condition in terms of the potential energy available over the length of the test section due to change in elevation. Linear regression of survey data typically provides the most representative quantification. Enter the bed slope of the Control Volume in the Bed Slope field as a decimal (i.e. 5.1% = 0.051).

Average Flow Depth – Average flow depth is the quantification of the average depth of flow over the control volume. Flow depth is the distance from the bed surface to the water surface, normal to the bed surface. The average of the flow depth at each data acquisition station over within the control volume is the average flow depth, expressed in ft. Section 7.2.11.3 of the QDOR Guidance Manual depicts the computation of flow depth.

Cross Section Area – Cross section area is a quantification of the planar area occupied by the flow, confined by the channel boundaries, normal to the bed. Section 7.2.5 of the QDOR Guidance Manual describes the computation of the cross section area for a station within the control volume. The

average of the cross section area at all data acquisition stations within the control volume should be entered, expressed in ft^2.

Cross Section Average Velocity – Cross section average velocity is the quantification of the speed of flow in the direction of flow, expressed in ft/s. Section 7.2.11.5 of the QDOR Guidance Manual provides explanation of the computation of the cross section average velocity. The average of computed cross section average velocity values at each data acquisition station within the control volume should be reported.

Slope of the Energy Grade Line – Elevation of the energy grade line at a give data acquisition station is determined as the summation of energy head at the station. The change in energy with respect to horizontal distance traveled defines the slope of the energy grade line. Section 7.2.11.2 of the QDOR Guidance Manual defines the computation of the slope of the energy grade line. Enter the slope of the sum of least squares optimized linear regression in the table, expressed as a decimal (i.e. 0.051).

Soil Loss – Enter the cumulative soil loss, expressed in inches, determined as the Clopper Soil Loss Index as described in Section 7.2.11.8 of the QDOR Guidance Manual. The soil loss should be considered over the entire control volume, averaging all measurements.

Manning's n – Manning's n is an empirical quantification of the resistance to flow. Given the measured hydraulic and geometric properties of the flow event, a value of Manning's n can be computed. Section 7.2.11.6 of the QDOR Guidance Manual provides explanation on the computation of Manning's n. A representative value for the flow event and test should be entered in the table. For the purposes of the QDOR database, Manning's n is considered to be unitless.

In addition to the data table provided in Section 3e (1), 3e (2) and 3e (3), several additional data values should be entered. The following provides guidance on data entry for the additional fields:

- Date – Enter the latest date of protected channel testing.
- In Place Compaction – Enter the in place density, expressed as a percentage of optimum dry density by standard proctor, as described in Section 7.1.4 of the QDOR Guidance Manual.
- Temperature – Enter the average temperature for all flow events reported.
- Run Duration – Each flow event should be conveyed for an identical length of time. Enter the length of time the installation is exposed to the target discharge.
- Plot Shear Stress vs. CSLI Type – Enter the type of regression function used to describe the relationship between shear stress and soil loss. The different types and usage of the regression function is described by Section 7.2.12 of the QDOR Guidance Manual.
- Plot Shear Stress vs. CSLI R^2 – Enter the value of the coefficient of determination for the plot of shear stress versus soil loss. Section 7.2.12 of the QDOR Guidance Manual describes the methodology to report the coefficient of determination.
- Critical Shear Stress – Report the shear stress, as determined by the regression function, at 0.5 inches of soil loss. Section 7.2.12 of the QDOR Guidance Manual describes the determination of critical shear stress.
- Cross Section Spacing – The distance in feet between cross sections identified and utilized for the collection of bed elevation and water surface data. Section 7.15 of the QDOR Guidance Manual provides explanation of the appropriate spacing and location of cross sections.

- Total DAL in CV – Total Data Acquisition Locations (DAL) in the Control Volume (CV) - A Data Acquisition Location (DAL) is a point within the test reach where bed elevation and/or water surface elevation data are collected. Section 7.1.5 of the QDOR Guidance Manual provides explanation regarding the identification and minimum number of DAL points within an acceptable control volume.
- Staple Type – Enter the type of staple used for testing. For example, "Steel U 6 in. x 1 in. 11ga" or "4 in. Ecostake", etc. would be acceptable.
- Staple Rate – The number of staples per square yard utilized for testing. Section 7.3.6 of the QDOR Guidance Manual provides an example of the computation of staple rate for QDOR purposes.
- n @ 0.25*Tc – Manning's n value at 25% of critical shear stress. Section 7.2.12.1 of the QDOR Guidance Manual provides explanation and example computation of Manning's n @ 25% of critical shear stress.
- n @ 0.5*Tc – Manning's n value at 50% of critical shear stress. Section 7.2.12.1 of the QDOR Guidance Manual provides explanation and example computation of Manning's n @ 50% of critical shear stress.
- n @ Tc – Manning's n value at critical shear stress. Section 7.2.12.1 of the QDOR Guidance Manual provides explanation and example computation of Manning's n @ critical shear stress.

Section 4a – Vegetated TRM Testing, Channel Dimensions

Section 4 is provided to record the parameters of protected vegetated TRM channel testing to determine the performance threshold of the material. Initially, a series of fields is provided to record the channel dimensions for testing. Section 7.13 of the QDOR Guidance Manual provides explanation and threshold values pertinent to vegetated channel testing.

Section 4b – Vegetated TRM Testing, Index Properties

A series of four fields are presented to record the index properties of the product. The values entered in the fields for Tensile Strength, Mass per Unit Area, Thickness and Light Penetration should be representative of values determined on material used in performance testing. For example, material used for vegetated channel performance testing should be sampled to determine these properties and those values reported in Section 4 to verify the material utilized for performance testing is typical with respect to the manufacturing specifications.

Section 4c – Vegetated TRM Testing, Index Properties

A data table and associated fields is provided for systematic entry of test data relating to the discharge, length of control volume (reach of data consideration start and stop), bed slope, average flow depth, cross section area, average cross section velocity, slope of the energy grade line, soil loss and Manning's n. It is not specifically necessary to enter data for all eight flow events as provided. Rather, Section 7.1.1 of the QDOR Guidance Manual provides specifications for the classification of a submittal as Class I (Gold) or Class II (Silver) with respect to number of flow events. Further, Section 7.2.11 of the QDOR Guidance Manual provides methodology and procedures for the determination and computation of values required as input in the data table of Section 4.

QDOR/ORF Specific Definitions:

Discharge – The volumetric rate of flow, typically measured by hydraulic control or flow meter. The discharge is symbolized by the letter Q and is reported in units of cubic feet per second (cfs). Enter the average discharge recorded over the duration of the flow event.

Control Volume Start/Stop – The station along the longitudinal axis of the test channel where data analysis is considered. Hydraulic analysis is conducted over a reach of consideration, termed a control volume. Proper selection of a control volume aids in maintaining data consistency with respect to other flow events and minimize the influence of outlier data points. Section 7.2.10 of the QDOR Guidance Manual provides insight and specifications into the selection of a control volume. Enter the distance, measured from the initiation of the test channel to the Start of the control volume and the end of the control volume (two values, presented in ft).

Bed Slope – The bed slope is a quantification of the change in elevation per unit of channel length, expressed as a decimal (percentage). This value quantifies the test condition in terms of the potential energy available over the length of the test section due to change in elevation. Linear regression of survey data typically provides the most representative quantification. Enter the bed slope of the Control Volume in the Bed Slope field as a decimal (i.e. 5.1% = 0.051).

Average Flow Depth – Average flow depth is the quantification of the average depth of flow over the control volume. Flow depth is the distance from the bed surface to the water surface, normal to the bed surface. The average of the flow depth at each data acquisition station over within the control volume is the average flow depth, expressed in ft. Section 7.2.11.3 of the QDOR Guidance Manual depicts the computation of flow depth.

Cross Section Area – Cross section area is a quantification of the planar area occupied by the flow, confined by the channel boundaries, normal to the bed. Section 7.2.5 of the QDOR Guidance Manual describes the computation of the cross section area for a station within the control volume. The average of the cross section area at all data acquisition stations within the control volume should be entered, expressed in ft^2.

Cross Section Average Velocity – Cross section average velocity is the quantification of the speed of flow in the direction of flow, expressed in ft/s. Section 7.2.11.5 of the QDOR Guidance Manual provides explanation of the computation of the cross section average velocity. The average of computed cross section average velocity values at each data acquisition station within the control volume should be reported.

Slope of the Energy Grade Line – Elevation of the energy grade line at a give data acquisition station is determined as the summation of energy head at the station. The change in energy with respect to horizontal distance traveled defines the slope of the energy grade line. Section 7.2.11.2 of the QDOR Guidance Manual defines the computation of the slope of the energy grade line. Enter the slope of the sum of least squares optimized linear regression in the table, expressed as a decimal (i.e. 0.051).

Soil Loss – Enter the cumulative soil loss, expressed in inches, determined as the Clopper Soil Loss Index as described in Section 7.2.11.8 of the QDOR Guidance Manual. The soil loss should be considered over the entire control volume, averaging all measurements.

Manning's n – Manning's n is an empirical quantification of the resistance to flow. Given the measured hydraulic and geometric properties of the flow event, a value of Manning's n can be computed. Section 7.2.11.6 of the QDOR Guidance Manual provides explanation on the computation of Manning's n. A representative value for the flow event and test should be entered in the table. For the purposes of the QDOR database, Manning's n is considered to be unitless.

In addition to the data table provided in Section 4, several additional data values should be entered. The following provides guidance on data entry for the additional fields:

- Date – Enter the latest date of protected channel testing.
- In Place Compaction – Enter the in place density, expressed as a percentage of optimum dry density by standard proctor, as described in Section 7.1.4 of the QDOR Guidance Manual.
- Temperature – Enter the average temperature for all flow events reported.
- Run Duration – Each flow event should be conveyed for an identical length of time. Enter the length of time the installation is exposed to the target discharge.
- Plot Shear Stress vs. CSLI Type – Enter the type of regression function used to describe the relationship between shear stress and soil loss. The different types and usage of the regression function is described by Section 7.2.12 of the QDOR Guidance Manual.
- Plot Shear Stress vs. CSLI R^2 – Enter the value of the coefficient of determination for the plot of shear stress versus soil loss. Section 7.2.12 of the QDOR Guidance Manual describes the methodology to report the coefficient of determination.
- Critical Shear Stress – Report the shear stress, as determined by the regression function, at 0.5 inches of soil loss. Section 7.2.12 of the QDOR Guidance Manual describes the determination of critical shear stress.
- Cross Section Spacing – The distance in feet between cross sections identified and utilized for the collection of bed elevation and water surface data. Section 7.1.5 of the QDOR Guidance Manual provides explanation of the appropriate spacing and location of cross sections.
- Total DAL in CV – Total Data Acquisition Locations (DAL) in the Control Volume (CV) - A Data Acquisition Location (DAL) is a point within the test reach where bed elevation and/or water surface elevation data are collected. Section 7.1.5 of the QDOR Guidance Manual provides explanation regarding the identification and minimum number of DAL points within an acceptable control volume.
- Staple Type – Enter the type of staple used for testing. For example, "Steel U 6 in. x 1 in. 11ga" or "4 in. Ecostake", etc. would be acceptable.
- Staple Rate – The number of staples per square yard utilized for testing. Section 7.3.6 of the QDOR Guidance Manual provides an example of the computation of staple rate for QDOR purposes.
- Vegetation Class – Record the class of vegetation utilizing the Soil Conservation Service (SCS) 1954 publication - *Handbook of Channel Design for Soil and Water Conservation* by visual inspection and vegetation type.
- Veg Type – Record species of grass or mix.
- Estimated Cover % - Record estimated cover by percent as determined by visual inspection.
- Vegetation Condition – Select "Dormant" or "Live" as best represents the condition of the vegetation during testing.
- Initial Vegetation Height (in) – Record the average plant height immediately prior to testing.

- Establishment Method – Select "Seeded", "Seeded and Soil Filled", "Sodded", "Hydraulically Applied" or "Other" as best represents the method of vegetation establishment for testing.
- Age of Sod – Applies only if establishment method is "Sodded". Record age of sod prior to placing sod on test plot.