

NEW JERSEY COMMUNITY WATER MONITORING GUIDE TO TIER 3 MACROINVERTEBRATE AND HABITAT ASSESSMENTS

The term *community water monitoring* (CWM) refers to nongovernmental groups conducting water monitoring activities, including physical, visual, chemical, or biological sampling and assessment. CWM groups are commonly assembled by nonprofit organizations, community groups, high school and college classes and clubs, resident and lake associations, etc. See *below for a note on academia*.

CWM groups use the data they collect for a number of purposes, one of which is to contribute to state governmental assessments of water quality. When CWM data is submitted to NJDEP for regulatory use, it is referred to as “external data” by NJDEP for deliverables such as the [Integrated Report](#) (IR).

The purpose of this guide is to assist CWM groups in meeting their water quality monitoring goals by outlining the requirements for CWM habitat and macroinvertebrate data collected on freshwater non-tidal streams to be submitted for use by NJDEP. Groups that are interested in collecting water quality data in New Jersey will find relevant information about how to submit their data for use by NJDEP in regulatory assessments for the IR and category redesignation. Data used in regulatory assessment must meet the necessary conditions and quality assurance standards as defined by NJDEP in this document and in the most current [IR Methods](#) document and deadlines for data collection and submission in the [IR data solicitation notice](#). All relevant study design and quality assurance elements must be incorporated into a Quality Assurance Project Plan (QAPP) and submitted to NJDEP for approval prior to the start of data collection.

CWM groups may also be interested in collecting in situ or analytical water quality data like pH, dissolved oxygen, or nutrient concentrations. The scope of this document refers only to habitat and macroinvertebrate assessment. To find the requirements for other types of data to be submitted to NJDEP, refer to the IR Methods document and the [NJDEP Office of Quality Assurance](#) information on lab and meter certification.

Note: Data collected as part of academic experiential research is typically not intended for baseline regulatory use and is typically considered separately from other non-agency data sources. Academic data is welcome for submission should the study design meet observational data conditions, in addition to the other data quality requirements listed herein.

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1. MONITORING GOALS AND USES

State the reasons you wish to start monitoring your stream or lake. The [Water Data Collaborative Worksheet 6.3.a](#) is helpful to narrow down those reasons and to develop an idea of how the data will be used, and by whom.

New Jersey has developed a three-tiered system to define its relationship with CWM data. Review the NJ Data Quality Tiers (Table 1) to identify the tier that most closely matches your intended monitoring goals. To submit water quality data to NJDEP, your goals and data quality must adhere to Tier 3 requirements.

Table 1: Community Water Monitoring Data Quality Tiered Framework

	TIER 1 <i>Educational</i>	TIER 2 <i>Targeting</i>	TIER 3 <i>Regulatory</i>
Data Uses	<ul style="list-style-type: none"> Community education Municipal engagement 	Includes Tier 1 uses, plus: <ul style="list-style-type: none"> Project-specific monitoring Water quality report cards BMP effectiveness monitoring Targeting installation of BMPs Targeting advanced monitoring NJDEP Comprehensive Regional Assessments 	Includes Tier 2 uses, plus: <ul style="list-style-type: none"> Regulatory assessments of water quality standard attainment
Data Quality Requirements	<i>Suggested:</i> At a minimum, a Study Design available for review by potential data users, with: <ul style="list-style-type: none"> Documentation of methods, locations, and timeframe 	QAPP approved at Tier 2 by NJDEP Bureau of Environmental Assessment, Restoration and Standards or NJ Watershed Watch Network with: <ul style="list-style-type: none"> Use of standard operating procedures with defined levels of accuracy and precision 	QAPP approved at Tier 3 by NJDEP Office of Quality Assurance, with: <ul style="list-style-type: none"> Use of NJDEP-Certified field and/or laboratory methods for chemical and microbiological analyses Use of EPA Rapid Bioassessment Protocol for habitat assessments Use of a defined NJ Watershed Watch Network method for macroinvertebrates (see Table 2)

2. STUDY DESIGN CONSIDERATIONS

2.1. Who will conduct the monitoring work?

Tier 3 monitoring personnel must become accredited for field work before the data they collect is eligible for Tier 3. See Section 3 for more information.

2.2. Where will you monitor?

This guide refers to the monitoring of freshwater non-tidal streams. Sites should be representative of the water body and [HUC-14 subwatershed](#) as a whole, preferably located near the furthest downstream point of a HUC-14. Additional monitoring locations may be placed upstream and on tributaries as

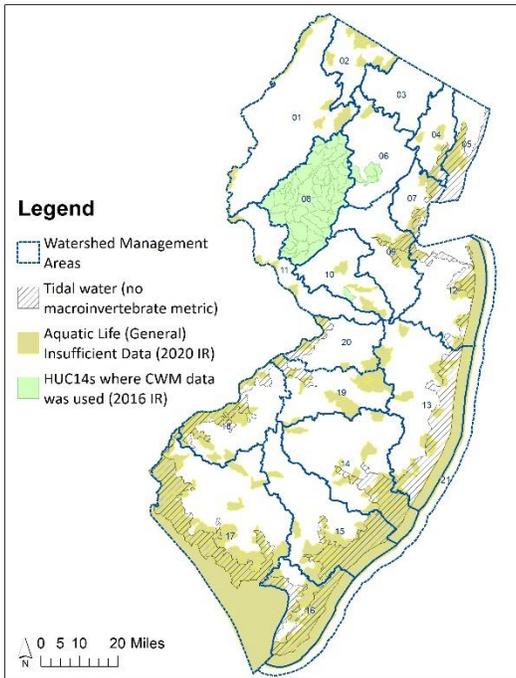


Figure 1: HUCs with Insufficient Aquatic Life Data, NJDEP

desired, though the sites should still be indicative of general water quality and habitat conditions. Sites should be located at least 500 feet downstream of dams or other impoundments.

Latitude and longitude must be established for all monitoring sites, with each site assigned a unique alphanumeric code as its Site ID. While monitoring sites should be fixed stations, these locations may change during the course of a monitoring program or project. This does not require a full QAPP update but should be submitted to NJDEP as a QAPP amendment.

As of the 2020 IR, there are 54 HUC-14 subwatersheds in New Jersey with insufficient data to assess the biological health of their freshwater nontidal streams, represented in Figure 1. CWM groups are encouraged to monitor in these areas to help reduce data gaps across the state. Check the [list of NJ HUC-14s with insufficient data to assess aquatic life condition](#) for detailed information.

2.3. When and how often will you monitor?

Water quality data used by NJDEP as regulatory assessment must reflect baseline conditions. If monitoring is conducted when stream flow is far lower or greater than baseflow conditions, the sample may not be representative of the stream under baseline conditions.

Macroinvertebrate sampling is typically performed between April 1–November 30. There is no requirement for monitoring frequency, though many programs will perform macroinvertebrate and habitat assessments once or twice per year.

Table 2: Overview of Volunteer and Financial Commitments by Tier

	MACROS 3.1 <i>Good</i>	MACROS 3.2 <i>Better</i>	MACROS 3.3 <i>Best</i>
Required Training and Testing	<ul style="list-style-type: none"> Two-day training Field accreditation every 3 years Streamside ID testing 	<ul style="list-style-type: none"> Three-day training Field accreditation every 3 years Lab ID testing 	<ul style="list-style-type: none"> Half-day training Field accreditation every 3 years
Volunteer Time Commitment	<ul style="list-style-type: none"> Field work: approximately 3 hours per sample 	<ul style="list-style-type: none"> Field work: approximately 1-2 hours per sample Lab work: approximately 3-4 hours per sample 	<ul style="list-style-type: none"> Field work: approximately 1-2 hours per sample
Financial Commitment	<ul style="list-style-type: none"> Up-front costs include sampling materials like waders, nets, trays, buckets, sieves, rinse bottles, and utensils 	<ul style="list-style-type: none"> Up-front costs include sampling materials (see 3.1) and preservation jars plus laboratory materials like dissecting microscopes, desk lamps, gridded sorting trays, 12-sided die, petri dishes, forceps, and vials Alcohol for preservation 	<ul style="list-style-type: none"> Up-front costs include sampling materials (see 3.1) and preservation jars Alcohol for preservation Lab identification – approximately \$150-250 per sample, plus shipping

3. MONITOR TRAINING AND TESTING REQUIREMENTS

NJ-WWN provides free training for groups seeking Tier 3 status. To schedule training, accreditation, and identification tests, contact NJ-WWN Coordinator Erin Stretz at estretz@thewatershed.org. [AmeriCorps Watershed Ambassadors](#) are available to provide Tier 1 or 2 training.

3.1. How can NJDEP and NJ-WWN ensure volunteer monitors know how to perform field assessments and collections correctly?

Volunteers must be accredited prior to collecting Tier 3 data and every three years thereafter. During an accreditation, a representative from NJDEP or NJ-WWN will oversee a practice session, looking for the completion of the tasks and skills identified in the Field Accreditation Checklist. Independent habitat evaluation results should agree with the auditor's assessment (optimal, sub-optimal, marginal or poor).

- [Tier 3.1 \(field identification\) Checklist](#)
- [Tier 3.3 \(field preservation\) Checklist](#)

Duplicate macroinvertebrate samples must be collected at 10% of each CWM group's sites every year. See Section 4.4 for more information.

3.2. How can NJDEP and NJ-WWN ensure volunteer monitors are identifying macroinvertebrate taxa correctly?

Macroinvertebrate identification testing is required for all monitors performing their own identifications (Tier 3.1 and 3.2). Monitors must correctly identify at least 90% of at least 50 preserved and/or live macroinvertebrate specimens. Tests will be prepared and administered by NJDEP in coordination with NJ-WWN.

Tier 3.1 monitors will be tested on 22 target macroinvertebrate taxa at the class, order, and family level as demonstrated by the [Tier 3.1 macroinvertebrate tally sheet](#).

Tier 3.2 monitors will be tested on a wider range of freshwater macroinvertebrate taxa that occur in New Jersey. The [NJDEP List of Genus and Family Level Macroinvertebrate Pollution Tolerance Values](#) lists relevant taxa.

4. QUALITY ASSURANCE IN DATA COLLECTION

4.1. QAPPs

Review the QAPP template to identify the required elements of quality assurance that must be incorporated into a Tier 3 program. All CWM groups must prepare a QAPP for NJDEP approval prior to the start of the project.

QAPPs should be submitted to Deborah Kratzer at Deborah.Kratzer@dep.nj.gov. You may expect a 30-day turnaround time for comments from relevant NJDEP staff. Allow for additional time to address comments and resubmit for approval. For this reason, you should submit your QAPP at least 60 days before you plan to begin sampling.

- [Tier 3.1 QAPP Template](#)

4.2. Chemical Data

To submit temperature data to NJDEP for use at a Tier 3 level, thermometers must be calibrated on a regular basis with the NJDEP Bureau of Freshwater and Biological Monitoring (BFBM).

NEW – Analog thermometers must be calibrated annually.
Digital thermometers must be calibrated quarterly (every three months) while they are in use.

If digital thermometers are used for a single sampling season (ex. May-June), a well-timed calibration prior to the start of that sampling season (ex. April) will necessitate just one calibration per year. To schedule a thermometer calibration, contact NJ-WWN Coordinator Erin Stretz at estretz@thewatershed.org.

Data quality standards for Tier 3 chemical in situ or analytical data like pH, dissolved oxygen, and nutrient concentrations are maintained by the [NJDEP Office of Quality Assurance \(OQA\)](#). CWM groups using handheld meters or continuous sensors must become a certified lab with OQA to submit chemical data for regulatory use.

4.3. Habitat Data

A habitat assessment must be performed during each macroinvertebrate sampling event. At a minimum, the assessment should include the 10-questions from the EPA Rapid Bioassessment Protocols (RBP) [Habitat Assessment Field Data Sheet](#). If not using the standardized data sheet below, the EPA RBP sheet should be appended to your field data sheet.

A standardized data sheet for New Jersey CWM groups is provided for consistency, though it is not required.

- [NJ Habitat and Macroinvertebrate Assessment Data Sheet – High Gradient](#)
- [NJ Habitat and Macroinvertebrate Assessment Data Sheet – Low Gradient](#)

4.4. Macroinvertebrate Data

Macroinvertebrate collection, subsampling, and identification methods are outlined in Section 8.2 of the Tier 3.1 QAPP template. Programs using Tier 3.1 will use a Macroinvertebrate Tally Sheet for macroinvertebrate identification in the field. Macroinvertebrates collected under Tier 3.3 protocols will be preserved in the field and should be accompanied by a Chain of Custody Form.

- [Tier 3.1 - Macroinvertebrate Tally Sheet](#)
- [Tier 3.3 - Macroinvertebrate Sample Chain of Custody Form](#)

Replicate macroinvertebrate samples must be collected at 10% of each CWM group's sites every year.

Replicate samples will be collected on the same day in an adjacent reach in similar habitats, avoiding areas that have already been sampled. The results of replicate samples should be submitted to WQX in addition to the primary sample, with the Activity Code labeled as 'Quality Control Sample-Field Replicate'. The replicate sample should have the same WQX Activity ID as the primary sample, replacing the addendum from ':BM' to ':BM-REP'.

Up to 5% of CWM group sites will be subject to field audits by NJDEP staff to assess the quality of data collection. NJDEP staff will contact the group coordinator to schedule an audit on a regularly scheduled field day.

Macroinvertebrate samples may be identified by accredited volunteers at Tier 3.1 and 3.2 or an approved external laboratory at Tier 3.3. The contract laboratory must submit their qualifications and quality assurance protocols as a QAPP appendix, which must be deemed acceptable by NJDEP BFBM.

Table 3: Summary of Habitat and Macroinvertebrate Assessment Requirements

	MACROS 3.1 <i>Good</i>	MACROS 3.2 <i>Better</i>	MACROS 3.3 <i>Best</i>
Macroinvertebrate Sampling	<ul style="list-style-type: none"> Sample collection with D-frame net using multi-habitat technique 		
Macroinvertebrate Preservation	<ul style="list-style-type: none"> No preservation required, organisms are returned to stream 	<ul style="list-style-type: none"> Sample preservation in the field 	
Habitat Assessment	<ul style="list-style-type: none"> At a minimum, the assessment should include the 10 questions from the EPA Rapid Bioassessment Protocols 		
Quality Assurance in the Field	<ul style="list-style-type: none"> Field accreditation of sampling technique before first sample and every 3 years thereafter Duplicate samples at 10% of sites every year Field audit of 5% of sites every year 		
Macroinvertebrate Identification	<ul style="list-style-type: none"> Performed streamside by volunteers Mix of Class, Order, and Family, limited to 22 target organisms 	<ul style="list-style-type: none"> Sample sorting, subsampling, and identification performed by volunteers with microscope Family (except Annelids at Class level) 	<ul style="list-style-type: none"> Sample sent to NJDEP-approved laboratory for sorting, subsampling, and identification Lowest practicable taxonomic level (Genus or Species)
Quality Assurance for Macroinvertebrate Identification	<ul style="list-style-type: none"> 50-organism proficiency test administered by NJ-WWN before first sample and every 3 years thereafter 	<ul style="list-style-type: none"> 50-organism Family-level proficiency test administered by NJ-WWN OR SFS Taxonomic Certification Exam¹ before first sample and every 3 years thereafter 10% of group samples re-identified annually by approved lab 	<ul style="list-style-type: none"> All identifications performed by NJDEP BFBM-approved lab
Macroinvertebrate Assessment Indices	<ul style="list-style-type: none"> Volunteer HGMI Volunteer CPMI Volunteer PMI 	<ul style="list-style-type: none"> HGMI – family (high gradient only) 	<ul style="list-style-type: none"> HGMI - genus CPMI PMI

5. DATA MANAGEMENT AND ASSESSMENT

5.1. Recordkeeping and Data Retention

Here are some questions to consider when storing your data. Will you lose data if your:

- Notebook goes missing?
- Local server goes down?
- Cloud server is corrupted?
- Office building catches fire?

Data recorded on paper data sheets should be transferred to a local or cloud-based database or spreadsheet program. Paper copies should be retained for at least 5 years. If individual volunteers submit data digitally to a group’s central database, they should also submit a photo or scan of the raw

¹ Society for Freshwater Science Taxonomic Certification Exam administered by Stroud Water Research Center (<https://stroudcenter.org/sfstcp>)

data sheet or field notebook to confirm digital entries. Databases should be backed up regularly in multiple locations to avoid data loss. These procedures, as well as who is responsible, should be documented in the QAPP.

5.2. Macroinvertebrate Index Calculation

New Jersey is divided into three regions for macroinvertebrate index calculations. Depending on where a macroinvertebrate sample is collected in the state, the data will be assessed using a different set of mathematical metrics.

The High Gradient Macroinvertebrate Index (HGMI) is applied to the orange region in Figure 2. The Coastal Plain Macroinvertebrate Index (CPMI) is applied to the yellow region. The Pinelands Macroinvertebrate Index (PMI) is applied to the green region. If a monitoring site is located near the boundary of the coastal plain and pinelands regions, confirm with NJDEP on the correct index to use in calculations.

For Tier 3.1 monitoring, volunteer indices are used which correspond to the same three regions: VHGMI, VCPMI, and VPMI.

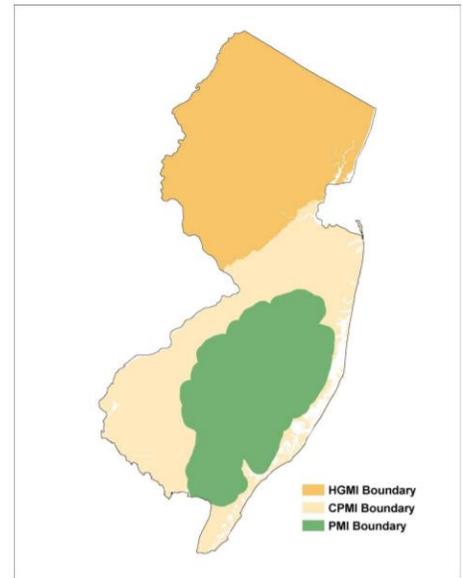


Figure 2: NJ Macroinvertebrate Indices by Region, NJDEP

5.3. Quality Control

Data sheets should be reviewed for completeness prior to leaving the monitoring site. Data should be reviewed before entry, upon entry, or after entry into the local or cloud-based database for accuracy and completeness. Any data that does not make sense (ex. a pH value above 14) should be rejected. A full list of quality assurance measures is included in Section 13-15 of the [Tier 3.1 QAPP Template](#).

CWM groups are subject to an audit of water quality data management and index calculation by NJDEP staff to confirm the data are recorded and stored properly.

Table 4: New Jersey Macroinvertebrate Indices

Habitat Type	Tier 3.1	Tier 3.2	Tier 3.3
High Gradient	Volunteer High Gradient Macroinvertebrate Index (VHGMI) • See VHGMI spreadsheet	High Gradient Macroinvertebrate Family Level Index (HGMI-family) • See HGMI-family fact sheet	High Gradient Macroinvertebrate Genus Level Index (HGMI) • See HGMI fact sheet
Low Gradient	Volunteer Coastal Plain Macroinvertebrate Index (VCPMI) • See VCPMI spreadsheet	NA	Coastal Plain Macroinvertebrate Genus Level Index (CPMI) • See CPMI fact sheet
Pinelands	Volunteer Pinelands Macroinvertebrate Index • See VPMI spreadsheet	NA	Pinelands Macroinvertebrate Index (PMI) • See PMI fact sheet

6. DATA SUBMISSION

Water quality data must be submitted to the Water Quality Exchange (WQX) to be considered by NJDEP. For assistance with data formatting and submission, contact NJ-WWN Coordinator Erin Stretz at estretz@thewatershed.org.

6.1. Getting Started with WQX

CWM groups must register with the EPA Central Data Exchange (CDX) to be able to submit data to WQX. To begin, send an email to [wxq@epa.gov](mailto:wqx@epa.gov) with the following information:

- First, middle, and last name
- Prefix (Mr./Mrs./Ms)
- WQX Organization ID
 - This must be a unique identifier for your organization (ex. Raritan Headwaters Association is listed as RHA and The Nature Conservancy's New Jersey office is listed as TNCNJ_WQX.)
- Organization Name
- Mailing Address, City, State, Zip Code
- Email Address
- Phone Number

EPA staff will reply to your email with further instruction on registering your account with CDX. Visit this website for full instructions: <https://www.epa.gov/waterdata/wqx-web-account-registration>

6.2. Metadata

Before any results can be submitted into WQX, the metadata on your monitoring project and locations must be uploaded into WQX. Click 'Review' while logged in to WQX to view your current projects and locations on file. Templates for formatting and submitting project and location information is included with all Result and Activity templates.

Creating Projects

*"A project should define WHY a sample is being collected. A project should contain a unique **ID**, a **name**, and a **description** of the projects purpose. You need to have at least one project, but you can have many. A project could contain an entire year's sampling, sampling related to a specific study, or even sampling related to particular water types (i.e. a lakes project)."*

[WQX Web Template User Guide](#), pg. 3

You may also choose to include a URL link to the associated QAPP to assist future data users.

Creating Monitoring Locations (Stations)

*"A monitoring location should describe WHERE a sample is being collected. A monitoring location must contain a unique **ID**, a **name**, a **monitoring location type** (i.e. river/stream, lake, etc.), **state/county**, and **latitude/longitude** coordinate information including the **method for getting the lat/long coordinates** [ex. GPS, map interpolation]. A monitoring location should also contain a name and description. This will help you distinguish monitoring locations down the road."*

[WQX Web Template User Guide](#), pg. 3

Monitoring location IDs must be unique codes. Append your organization code to your monitoring location ID to distinguish it from others (ex. 'TWI-1' instead of '1', or 'RHA-BB18' instead of 'BB18').

6.3. Data Formatting

6.3.1. Import Configurations and Excel Templates

Formatting requirements for WQX data submission are very specific. WQX provides Excel spreadsheet 'Import Configuration' templates to assist you with formatting different types of Results and Activities.

Table 5: Import Configurations and WQX Templates for Different Data Types

Data	Import Configuration (Owner: .WQX 3.0)	WQX Template
Biological taxa counts	.Template Biological (Template)	WQX Biological Results Excel Template
Calculated biological index scores	.Template BioHabitat Index (Template)	WQX Biological Metrics and Indices Excel Template
Habitat assessment results	.Template Habitat (Template)	WQX Habitat Results Excel Template
Physical/Chemical field measurements	.Template Physical/Chemical (Template)	WQX Physical/Chemical Results Excel Template

Click 'Setup' in WQX to view your existing Import Configurations. You will find existing configurations under the owner '.WQX 3.0', which are referenced in the table above. You may download an existing configuration (or copy the spreadsheet headers) to start formatting your data or you may create your own configuration. Either way, the headers and columns on your data upload spreadsheet must match exactly an Import Configuration that you already have on file.

The Excel templates listed above contain multiple tabs with instructions, a term glossary, and a tab to enter and format results. Each template also includes a tab to submit project and location information if needed.

6.3.2. Data Validation Rules

Many columns in the Import Configuration are subject to data validation rules. For example, when selecting your Activity Media, you must select from a list of allowed values like Water, Biological, or Habitat. You may view the list of allowed values on the template spreadsheets or by clicking 'View or Download Other Domain Values' in WQX.

Activity IDs should follow the current naming convention: 'SITE:YYYYMMDD:HHMM:ACTIVITYADDENDUM'. (Time is not required. You may delete the time from the activity ID if there was only one activity performed at the site that day.) The activity addendum will change depending on the type of activity for which you are reporting results. During a single field visit at one monitoring location, a group may collect benthic macroinvertebrates, measure water temperature, and perform a habitat assessment. The site name and date will remain the same for all of these results, though the time and activity type will vary.

Table 6: Creating a Unique Activity ID

Activity	Activity Type Code	Activity ID Addendum	Activity ID Example
Benthic macroinvertebrate enumeration	Sample-Routine	BM	TWI-1:20220630:BM
Benthic macroinvertebrate replicate sample enumeration (see Section 4.4)	Quality Control Sample-Field Replicate	BM-REP	TWI-1:20220630:BM-REP
Water temperature or other field chemical or physical measurement at 1:30 pm	Field Msr/Obs	FM	TWI-1:20220630:1330:FM
EPA RBP Habitat Assessment quantitative results	Field Msr/Obs-Habitat Assessment	FM-HA	TWI-1:20220630:FM-HA

Note: The addendum codes are not required by WQX, but suggested by NJ-WWN.

You may have multiple results with the same Activity ID if they are the same Activity Type. For example, an in-situ pH and DO measurement would share an Activity ID if collected at the same time because they are both field measurements.

6.3.3. Minimum Data Requirements

WQX templates are listed below along with the minimum pieces of data that should be submitted for Tier 3 use of NJ CWM habitat and biological data.

Table 7: Minimum Data Requirements for Tier 3 Data Use

Import Configuration/ Template	High Gradient	Low Gradient/ Coastal Plain and Pinelands
Biological	Count	Count
Index (See Section 5.2)	HGMI-gen, HGMI-family, or VHGMI	CPMI, VCPMI, PMI, or VPMI
Habitat (See Section 4.3)	RBP2, High G, Epifaunal Substrate/Available Cover (choice list)	RBP2, Low G, Epifaunal Substrate/Available Cover (choice list)
	RBP2, High G, Embeddedness (choice list)	RBP2, Low G, Pool Substrate Characterization (choice list)
	RBP2, High G, Velocity/Depth Regime (choice list)	RBP2, Low G, Pool Variability (choice list)
	RBP2, High G, Sediment Deposition (choice list)	RBP2, Low G, Sediment Deposition (choice list)
	RBP2, High G, Channel Flow Status (choice list)	RBP2, Low G, Channel Flow Status (choice list)
	RBP2, High G, Channel Alteration (choice list)	RBP2, Low G, Channel Alteration (choice list)
	RBP2, High G, Frequency of Riffles (or bends) (choice list)	RBP2, Low G, Channel Sinuosity (choice list)
	RBP2, High G, Bank Stability, Left Bank (choice list)	RBP2, Low G, Bank Stability, Left Bank (choice list)
	RBP2, High G, Bank Stability, Right Bank (choice list)	RBP2, Low G, Bank Stability, Right Bank (choice list)
	RBP2, High G, Vegetative Protection, Left Bank (choice list)	RBP2, Low G, Vegetative Protection, Left Bank (choice list)
	RBP2, High G, Vegetative Protection, Right Bank (choice list)	RBP2, Low G, Vegetative Protection, Right Bank (choice list)
	RBP2, High G, Riparian Vegetative Zone Width, Left Bank (choice list)	RBP2, Low G, Riparian Vegetative Zone Width, Left Bank (choice list)
	RBP2, High G, Riparian Vegetative Zone Width, Right Bank (choice list)	RBP2, Low G, Riparian Vegetative Zone Width, Right Bank (choice list)
	RBP2, High G, habitat assessment total score	RBP2, Low G, habitat assessment total score
RBP2, High G, habitat assessment total rating	RBP2, Low G, habitat assessment total rating	

Additional characteristics may also be entered. From 'View or Download Other Domain Values' in WQX, click on 'Characteristics' to view the full list of parameters for which you may enter data. Some characteristics have a list of responses from which to choose, while others do not require data validation.

6.4. Helpful WQX Resources

- [WQX Web User Guide – Version 3.0 \(3/30/20\)](#)
- [WQX Flow Configuration Document](#)
- [WQX Glossary](#)
- [WQX Best Practices for Submitting Benthic Macroinvertebrate Data](#)

6.5. Data Submission and Quality Control

After the results are formatted correctly, save the spreadsheet as a .txt or .csv file to prepare it for submission to WQX. Click 'Import & Submit' in WQX to upload your file. You must select an existing Import Configuration to map your file correctly.

After the data has been submitted to WQX, CWM groups should review the submission in the [Water Quality Portal](#) to ensure the data transferred correctly.