

Table 1. Community Water Monitoring Tiered Data Quality Framework



In general, the amount of time, money, and expertise required increases with the tiers.

	Data Uses	General Requirements
TIER 1	<ul style="list-style-type: none"> Community education Municipal engagement 	<p>Study design available for review by potential data users, with:</p> <ul style="list-style-type: none"> Documentation of methods, locations, and timeframe
TIER 2	<p>Includes Tier 1 uses, plus:</p> <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 	<p>QAPP¹ approved at Tier 2 by NJDEP BEARS² or NJ Watershed Watch Network with:</p> <ul style="list-style-type: none"> Use of standard operating procedures with defined levels of accuracy and precision
TIER 3	<p>Includes Tier 2 uses, plus:</p> <ul style="list-style-type: none"> Regulatory assessments of water quality standard attainment 	<p>QAPP¹ approved at Tier 3 by NJDEP Office of Quality Assurance, with:</p> <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)

¹QAPP = Quality Assurance Project Plan, a technical document that describes exactly how your data is being collected, analyzed, and stored for future potential data users to review. NJ Watershed Watch Network will help you to prepare according to the guidelines set forth by NJDEP Office of Quality Assurance and the EPA Citizen Science Handbook.

²NJDEP Bureau of Environmental Assessment, Restoration and Standards

Table 2. A Deep Dive into Tier 3 Macroinvertebrate Assessments

	MACROS 3.1 <i>Good (AmeriCorps method)</i>	MACROS 3.2 <i>Better</i>	MACROS 3.3 <i>Best</i>
Method	<ul style="list-style-type: none"> • Sample collection with D-frame net using multi-habitat technique • Subsampling and identification performed by volunteers in the field 	<ul style="list-style-type: none"> • Sample collection with D-frame net using multi-habitat technique • Sample preservation in the field, with 95% ethanol • Sample sorting, subsampling, and identification performed by volunteers in a controlled environment 	<ul style="list-style-type: none"> • Sample collection with D-frame net using multi-habitat technique • Sample preservation in the field, with 95% ethanol • Sample sent to laboratory for sorting, subsampling, and identification
Taxonomic Level	<ul style="list-style-type: none"> • Mix of Class, Order, and Family, limited to 22 target organisms 	<ul style="list-style-type: none"> • Family (except Annelids at Class level) 	<ul style="list-style-type: none"> • Genus or Species
Assessment Indices	<ul style="list-style-type: none"> • Volunteer High Gradient Index • Volunteer Coastal Plain Index • Volunteer Pinelands Index 	<ul style="list-style-type: none"> • HGMI – family (high gradient only) 	<ul style="list-style-type: none"> • HGMI • CPMI • PMI
Quality Assurance	<ul style="list-style-type: none"> • 50-organism identification proficiency test before first sample and every 3 years thereafter • Field audit of sampling technique before first sample and every 3 years thereafter 	<ul style="list-style-type: none"> • 50-organism identification proficiency test before first sample and every 3 years thereafter • 10% of group samples re-identified annually by approved lab • Field audit of sampling technique before first sample and every 3 years thereafter 	<ul style="list-style-type: none"> • All identifications performed by approved lab • Field audit of sampling technique before first sample and every 3 years thereafter
Training	<ul style="list-style-type: none"> • Two-day training 	<ul style="list-style-type: none"> • Three-day training 	<ul style="list-style-type: none"> • Half-day training
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 hour per sample • Lab work – approximately 3-4 hours per sample 	<ul style="list-style-type: none"> • Field work – approximately 1 hour per sample
Financial Resources Required	<ul style="list-style-type: none"> • Up-front costs to include sampling materials like waders, nets, trays, buckets, sieves, rinse bottles, and utensils 	<ul style="list-style-type: none"> • Up-front costs to 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 • Ethanol for preservation 	<ul style="list-style-type: none"> • Up-front costs to include sampling materials (see 3.1) and preservation jars • Ethanol for preservation • Lab identification – approximately \$150-250 per sample, plus shipping

Table 3. Community Water Monitoring QAPPs and Audits

Tier	Parameter	QAPP Approval	Audit By	QA
1	Any	None	None	None
2	Field and/or lab parameters, habitat, macroinvertebrates	BEARS, NJ WWN, EPA or USGS	Organization or NJ WWN	<ul style="list-style-type: none"> Organizations train and audit their own volunteers. QA requirements (e.g. calibration and duplicates) are similar to OQA, but the organization does not have OQA certification or an OQA approved QAPP.
3	Field and/or lab parameters	BEARS & OQA, EPA or USGS	OQA, EPA or USGS	<ul style="list-style-type: none"> According to OQA, EPA or USGS requirements
3	Habitat	BEARS & OQA	NJ WWN	<ul style="list-style-type: none"> NJ WWN “train the trainer” (organizations’ trained representatives train and audit their individual participants) Independent habitat evaluation results agree with assessment (optimal, sub-optimal, marginal or poor) Field audit of sampling technique before first sample and every 3 years thereafter which can be performed by program coordinator
3	Macroinvertebrate field collection technique	BEARS & OQA	NJ WWN	<ul style="list-style-type: none"> NJ WWN “train the trainer” (organizations’ trained representatives train and audit their individual participants) Field audit of sampling technique before first sample and every 3 years thereafter
3.1 ³	Macroinvertebrate ID (ID in field, mix of Class, Order, and Family)	BEARS & OQA	BFBM staff with NJ WWN	<ul style="list-style-type: none"> 2-day training 90% pass on 50-organism identification proficiency test before first sample and every 3 years thereafter
3.2 ⁴	Macroinvertebrate ID (preserved, Family (except Annelid Class))	BEARS & OQA	BFBM staff with NJ WWN	<ul style="list-style-type: none"> 3-day training 90% pass on 50-organism identification proficiency test OR Society for Freshwater Science Family-Level Certification before first sample and every 3 years thereafter 10% of group samples re-identified annually by approved lab.
3.3 ⁵	Macroinvertebrate ID (preserved, by “certified” lab to genus or species)	BEARS & OQA	BFBM staff with NJ WWN	<ul style="list-style-type: none"> Contract laboratory must submit their qualifications and quality assurance protocols, which must be acceptable to BFBM.

³Examples: AmeriCorps Watershed Ambassador Program

⁴Example: The Watershed Institute (some samples)

⁵Examples: Raritan Headwaters Assn., Great Swamp Watershed. Assn., Musconetcong Watershed. Assn., The Watershed Institute (some samples)

NJ Watershed Watch Network | **HABITAT AND MACROINVERTEBRATE DATA SHEET**

Date:	Time:	Project Name:
Investigators:		Organization:
Site ID:	Site Location Description:	
Approximate Reach Length (aim for 100m):	Current Weather Conditions: <input type="checkbox"/> Clear <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Light Rain (no runoff) <input type="checkbox"/> Heavy Rain (runoff) <input type="checkbox"/> Snow <input type="checkbox"/> Heavy Snow Melt	Weather in Past 24 Hours: <input type="checkbox"/> Clear <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Light Rain (no runoff) <input type="checkbox"/> Heavy Rain (runoff) <input type="checkbox"/> Snow <input type="checkbox"/> Heavy Snow Melt
Days Since Last Rain:		
Air Temp (°C): Water Temp (°C):		

Representative Wetted Width:	Representative Depth Profile: _____ , _____ , _____ , _____ , _____ = Avg. _____
Neutrally Buoyant Object Velocity	Distance: _____
Float Time: _____ , _____ , _____ , _____ , _____ = Avg. _____	Avg. Velocity: _____
<input type="checkbox"/> Check here if this section is not completed due to nonwadable assessment.	

Stream Flow: <input type="checkbox"/> Slow (barely moving or not at all) <input type="checkbox"/> Moderate (clearly moving, surface flat) <input type="checkbox"/> Swift (clearly moving, surface disturbed) <input type="checkbox"/> Combination	Water Odor: <input type="checkbox"/> Normal <input type="checkbox"/> Anaerobic <input type="checkbox"/> Sewage <input type="checkbox"/> Petroleum <input type="checkbox"/> Chemical <input type="checkbox"/> Other:	Turbidity: <input type="checkbox"/> Clear <input type="checkbox"/> Clear, tea-stained <input type="checkbox"/> Slightly turbid <input type="checkbox"/> Milky <input type="checkbox"/> Turbid	Surface Coating: <input type="checkbox"/> None <input type="checkbox"/> Oil <input type="checkbox"/> Foam <input type="checkbox"/> Pollen <input type="checkbox"/> Scum <input type="checkbox"/> Other:	In-Stream Structures: <input type="checkbox"/> None <input type="checkbox"/> Bridge <input type="checkbox"/> Culvert <input type="checkbox"/> Dam <input type="checkbox"/> Outfall <input type="checkbox"/> Other:
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Stream Morphology: <input type="checkbox"/> Riffle: _____% <input type="checkbox"/> Run: _____% <input type="checkbox"/> Pool: _____%	Macroinvertebrate & Epifaunal Habitat Types: <input type="checkbox"/> Woody debris <input type="checkbox"/> Submerged logs <input type="checkbox"/> Leaf packs <input type="checkbox"/> Aquatic vegetation <input type="checkbox"/> Undercut banks <input type="checkbox"/> Riffles/Cobble <input type="checkbox"/> Gravel/Sand <input type="checkbox"/> Other:	Benthic Substrate Characterization: <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:50%;">Clay %: (<0.004 mm, slick)</td> <td style="width:50%;">Silt %: (0.004-0.06 mm)</td> </tr> <tr> <td>Sand %: (0.06-2mm, gritty)</td> <td>Gravel %: (2-64mm, 0.1-2.5")</td> </tr> <tr> <td>Cobble %: (64-256mm, 2.5-10")</td> <td>Boulder %: (>256mm, >10")</td> </tr> <tr> <td>Bedrock %: (unbroken)</td> <td>Other %:</td> </tr> </table>	Clay %: (<0.004 mm, slick)	Silt %: (0.004-0.06 mm)	Sand %: (0.06-2mm, gritty)	Gravel %: (2-64mm, 0.1-2.5")	Cobble %: (64-256mm, 2.5-10")	Boulder %: (>256mm, >10")	Bedrock %: (unbroken)	Other %:
Clay %: (<0.004 mm, slick)	Silt %: (0.004-0.06 mm)									
Sand %: (0.06-2mm, gritty)	Gravel %: (2-64mm, 0.1-2.5")									
Cobble %: (64-256mm, 2.5-10")	Boulder %: (>256mm, >10")									
Bedrock %: (unbroken)	Other %:									

Aquatic Vegetation Types: <input type="checkbox"/> Rooted emergent <input type="checkbox"/> Rooted submergent <input type="checkbox"/> Rooted floating <input type="checkbox"/> Free floating Portion of Reach With Vegetation: _____%	Algae Type: <input type="checkbox"/> Periphyton <input type="checkbox"/> Filamentous Portion of Reach With Algae: _____% Suspected HAB: Yes No Comments:	Bank Vegetation: <input type="checkbox"/> Trees <input type="checkbox"/> Shrubs <input type="checkbox"/> Grasses <input type="checkbox"/> Lawns <input type="checkbox"/> Invasive species <input type="checkbox"/> None <input type="checkbox"/> Other:	Tree Canopy: <input type="checkbox"/> Open (0-25%) <input type="checkbox"/> Mostly Open (25-50%) <input type="checkbox"/> Mostly Closed (50-75%) <input type="checkbox"/> Closed (75-100%)
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Land Uses in ¼ Mile Radius: <input type="checkbox"/> Agriculture (cropland) <input type="checkbox"/> Agriculture (livestock) <input type="checkbox"/> Meadow/Field <input type="checkbox"/> Forested <input type="checkbox"/> Preserved Open Space <input type="checkbox"/> Rural <input type="checkbox"/> Athletic Fields <input type="checkbox"/> Roadway <input type="checkbox"/> Parking Lot	<input type="checkbox"/> Low Density Residential <input type="checkbox"/> Medium Density Residential <input type="checkbox"/> High Density Residential <input type="checkbox"/> Urban <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Construction <input type="checkbox"/> Other:	Litter: <input type="checkbox"/> None <input type="checkbox"/> Scarce <input type="checkbox"/> Moderate <input type="checkbox"/> Abundant <input type="checkbox"/> Dump site Comments:	Wildlife Observations: <input type="checkbox"/> Fish <input type="checkbox"/> Frogs <input type="checkbox"/> Turtles <input type="checkbox"/> Crayfish <input type="checkbox"/> Clams/Mussels <input type="checkbox"/> Salamanders <input type="checkbox"/> Waterfowl <input type="checkbox"/> Other:
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Comments/Observations:

Site Sketch Indicate roads, buildings, landmarks, parking area, access point(s) to stream, stream flow direction, in-stream habitat for macroinvertebrate sampling (i.e. riffles, pools, aquatic vegetation, woody debris), outfalls, etc.:

Regional Scored Habitat Assessment: High Gradient Habitat Assessment Low Gradient Habitat Assessment

COMPLETE THIS SECTION ONLY IF MACROINVERTEBRATE SAMPLING WAS PERFORMED.

Sample Equipment: <input type="checkbox"/> D-Net <input type="checkbox"/> Seine <input type="checkbox"/> Surber sampler <input type="checkbox"/> Other:	Preservation Method: <input type="checkbox"/> Detritus preservation <input type="checkbox"/> Organism-only preservation <input type="checkbox"/> None: Field identification <input type="checkbox"/> Other:	Form Attached: <input type="checkbox"/> Tier 3.1 Macroinvertebrate Tally Sheet <input type="checkbox"/> Tier 3.2, 3.3: Chain of Custody Form <input type="checkbox"/> Other:
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HABITAT ASSESSMENT FOR HIGH GRADIENT STREAMS

Habitat Parameter	Condition Category				
	Optimal	Suboptimal	Marginal	Poor	
1. Epifaunal Substrate/ Available Cover	Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient).	40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of new fall, but not yet prepared for colonization (may rate at high end of scale).	20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.	Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
2. Embeddedness	Gravel, cobble and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.	Gravel, cobble and boulder particles are 25-50% surrounded by fine sediment.	Gravel, cobble and boulder particles are 50-75% surrounded by fine sediment.	Gravel, cobble and boulder particles are more than 75% surrounded by fine sediment.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
3. Velocity/Depth Combinations	All 4 velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is <0.3 m/s, deep is >0.5 m/s)	Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).	Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).	Dominated by 1 velocity / depth regime (usually slow-deep).	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
4. Sediment Deposition	Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.	Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.	Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions and bends; moderate deposition of pools prevalent.	Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
5. Channel Flow Status	Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.	Water fills >75% of the available channel; or <25% of channel substrate is exposed.	Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.	Very little water in channel and mostly present as standing pools.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
6. Channel Alteration	Channelization or dredging absent or minimal; stream with normal pattern.	Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.	Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.	Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. In stream habitat greatly altered or removed entirely.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
7. Frequency of Riffles	Occurrence of riffles relatively frequent; distance between riffles is 5-7 times stream width; variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.	Occurrence of riffles infrequent; distance between riffles is 7 to 15 times stream width.	Occasional riffle or bend; bottom contours provide some habitat; distance between riffles is 15 to 25 times stream width.	Generally all flat water or shallow riffles; poor habitat; distance between riffles is >25 times stream width.	
SCORE	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1 0	
8. Bank Stability (score each bank, facing upstream)	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.	Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.	Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.	
SCORE (LB)	10 9	8 7 6	5 4 3	2 1 0	
SCORE (RB)	10 9	8 7 6	5 4 3	2 1 0	
9. Bank Vegetative Protection (score each bank)	More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or non-woody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally.	70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining.	50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining.	Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height.	
SCORE (LB)	10 9	8 7 6	5 4 3	2 1 0	
SCORE (RB)	10 9	8 7 6	5 4 3	2 1 0	
10. Riparian Vegetative Zone Width	Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.	Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.	Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.	Width of riparian zone <6 meters: little or no riparian vegetation due to human activities.	
SCORE (LB)	10 9	8 7 6	5 4 3	2 1 0	
SCORE (RB)	10 9	8 7 6	5 4 3	2 1 0	
Rating:	HABITAT SCORE		Site ID:	HABITAT SCORES	VALUE
			Date:	OPTIMAL	160 - 200
				SUB-OPTIMAL	110 - 159
				MARGINAL	60 - 109
		POOR		< 60	

NEW JERSEY COMMUNITY WATER MONITORING FIELD AUDIT DOCUMENTATION FORM

Organization:	Monitoring Tier (circle one):	3.2 & 3.3 preservation	3.1 streamside ID	other
Auditor Name:	Audit Location:			
Audit Notes:				
Auditor Signature:	Audit Date:			

1	Monitor Name:	Outcome (Pass/Fail):
	Corrective Actions:	Monitor Signature:

2	Monitor Name:	Outcome (Pass/Fail):
	Corrective Actions:	Monitor Signature:

3	Monitor Name:	Outcome (Pass/Fail):
	Corrective Actions:	Monitor Signature:

4	Monitor Name:	Outcome (Pass/Fail):
	Corrective Actions:	Monitor Signature:

5	Monitor Name:	Outcome (Pass/Fail):
	Corrective Actions:	Monitor Signature:

6	Monitor Name:	Outcome (Pass/Fail):
	Corrective Actions:	Monitor Signature:

7	Monitor Name:	Outcome (Pass/Fail):
	Corrective Actions:	Monitor Signature:

8	Monitor Name:	Outcome (Pass/Fail):
	Corrective Actions:	Monitor Signature:

9	Monitor Name:	Outcome (Pass/Fail):
	Corrective Actions:	Monitor Signature:

10	Monitor Name:	Outcome (Pass/Fail):
	Corrective Actions:	Monitor Signature:

11	Monitor Name:	Outcome (Pass/Fail):
	Corrective Actions:	Monitor Signature:

12	Monitor Name:	Outcome (Pass/Fail):
	Corrective Actions:	Monitor Signature:

13	Monitor Name:	Outcome (Pass/Fail):
	Corrective Actions:	Monitor Signature:

14	Monitor Name:	Outcome (Pass/Fail):
	Corrective Actions:	Monitor Signature:

NJ Watershed Watch Network | **MACROINVERTEBRATE TIER 3.1**
FIELD AUDIT FORM

Instructions: Observe the volunteer monitor in the field as they run through a full macroinvertebrate and habitat assessment and check off as they perform the following tasks:

- All necessary sampling gear present
- Identify 100 meter stretch
- Identify macroinvertebrate habitat types present
- Begin macroinvertebrate sampling at downstream end
- Used appropriate method for habitat type
 - Disturb 1 foot square area upstream of D-net in riffle area or other sediment
 - Scrape submerged woody debris
 - Jab and sweep vegetation and vegetated banks
 - Rub leaf packs and vegetation
- Take 20 samples from the stream reach, proportional to most productive habitat present at site
- Empty contents of net into sieve bucket after each sample
- Rinse net and sieve bucket into bucket at conclusion of sampling. Check both for clinging organisms and add them to sample bucket.
- Remove larger pieces of debris from sample, checking for clinging macros and adding them to the sample bucket
- Mix up contents of bucket to take a sub-sample
- Remove all organisms from subsample tray
- Take additional subsamples to obtain at least 100 macros
- Tally macros using sheet, down to order or family level
- Complete biological data sheet
- Collect physical measurements (ex. temperature, width, depth) as needed
- Complete habitat assessment data sheet in full using appropriate sheet
- Decontaminate equipment

TIMING NOTES:

If after 20 minutes you have not found 25 macroinvertebrates you are to return to the stream to collect more macroinvertebrates to add to the bucket.

If after 40 minutes of sorting you have not found 50 macroinvertebrates you are to return to the stream again to collect a third round of samples to add to the bucket.

If after an hour and a half, and three separate attempts to collect macroinvertebrates to add to the sample in the bucket you are still unable to sort and identify 100 macroinvertebrates you will stop sorting and check the box on the assessment form indicating that you were unable to find 100 macroinvertebrates.