Tennessee Stream Quantification Tool (SQT) and Debit Tool Q&As

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Summary:

The Tennessee Stream Quantification Tool (TN SQT) and the Tennessee Debit Tool is the preferred methodology to evaluate stream impacts and stream compensatory mitigation associated with permit authorizations under Sections 404/401 of the Clean Water Act and/or Sections 9 or 10 of the Rivers and Harbors Act of 1899. This living document provides answers to common questions fielded by U.S. Army Corps of Engineers (USACE) and Tennessee Department of Environment and Conservation (TDEC) regulatory staff related to the use of the TN SQT and Debit Tool. The Questions and Answers (Q&As) below are organized by the different components of the SQT and Debit Tool. Most of the items discussed in this Q&A applywhere the applicant chooses to measure certain field parameters, rather than utilize a standard functional value. The latest versions of the TN SQT manuals, SQT and Debit tool, and Q&A documents can be downloaded from the TDEC and Nashville District USACE websites.

Rapid Assessment Form

1. **Q:** Do I need to fill out every part of the field form when assessing an ephemeral reach?

   A: No. We recommend that you review the Existing Condition Assessment Spreadsheet to determine which assessment parameters do not apply to ephemeral streams. This can be done by selecting “ephemeral” for the flow type. You can expedite your assessment by only collecting the data that is applicable to ephemeral streams.

2. **Q:** How do I determine if the stream has multiple reaches and assessment segments? Are there length criteria?

   A: Please refer to Part 2.1 of the *Rapid Data Collection Methods* manual for complete information on reach segmentation and determining locations of assessment segments. Length criteria are provided in the manual.

3. **Q:** How do I collect data on the various parameters for short stream reaches?

   A: Please refer to Part 2.1 of the *Rapid Data Collection Methods* manual for complete information on determining length of stream reaches and assessment segments. Additionally, the manual states: *"Riparian vegetation is evaluated for the entire length of each stream reach. [For floodplain connectivity, lateral stability, and bed form diversity,] if the entire stream reach is shorter than 20 times the bankfull width, then the entire reach should be assessed. If the stream reach is less than 100m, the LWD [large woody debris] assessment must extend proportionally into the upstream and downstream reach to achieve the 100m requirement."* In cases where the total stream length is less than 100m, LWD may be assessed for the entire stream, then a proportional multiplier applied to correspond to 100m. For example, if the stream is 50m long with one piece of LWD, then the LWD # of pieces would be two pieces per 100m.

4. **Q:** What do I do if I am unable collect complete or representative data for various parameters due to access restrictions or other site constraints?

   A: Should the practitioner be unable to collect complete or representative data for various parameters of the reach, the practitioner may choose to either complete the measurements during more favorable field or access conditions, or may utilize the default value for these parameters.

5. **Q:** We completed the Reach Walk as discussed in Section II.B of the field form. We determined a consensus value for the difference between the bankfull (BKF) stage and water surface (WS). In order to expedite our documentation, may I just list the consensus value and one indicator in Section II.B of the field form?

   A: No. Part 3.1 of the *Rapid Data Collection Methods* manual states *"Measure the distance between water surface elevation and bankfull indicators throughout the reach. Data is recorded during the reach walk in Section II of the field form."* The bankfull determination is a critical first step in accurately completing the assessment. In order to document this critical step has been completed, the practitioner must document multiple bankfull indicators and horizontal distance to water surface elevation on Section II of the field form. Additionally, by providing this documentationit assists the agencies in expediting field reviews of your assessment.

6. **Q:** For Section III of the field form, may I complete stable riffle cross section measurements at a riffle that is immediately adjacent to a culvert or other in-stream structure.

   A: Generally no. Geomorphology is often unstable and not representative in locations where a stream enters or exits a structure, such as a culvert or bridge. Part 3.1 of the *Rapid Data Collection Methods* manual states *"Select a suitable riffle within the reach that has stable width and depth, no signs of bank erosion or headcutting, and a bank height ratio near 1.0…"* Such stable conditions are not typically found within the zone of influence of a structure. Please select a stable riffle that is not within the zone of influence of a structure, such as a culvert or bridge.

7. **Q:** We completed measurements of the stable riffle cross section, as described in Section III of the field form. The measured bankfull area is not close to the regional curve bankfull area. Can I move on to Section IV?

   A: Generally no. Please review Part 3.2 of the *Rapid Data Collection Methods* manual for procedures, tips, and solutions in this situation. Your chosen bankfull elevation may need to be reviewed, or you may need to choose a different stable riffle to complete your cross section measurements. The manual states *"Compare the measured bankfull cross-sectional area from the stable riffle to the regional curve. The field data for the site should fall within the range of scatter of the regional curve in order for bankfull to be verified. Typically, the cross-sectional area curve is used to make this determination… If the field data are outside the range of scatter used to develop the regional curve, the user will need to determine if the wrong indicator was selected... If the wrong indicator was selected, then the user can review the bankfull indicators identified in the reach walk to determine if the bankfull indicator at the selected riffle needs to be revised and bankfull dimensions recalculated*." In order to complete Part III of the field form, the user may need to choose a different stable riffle outside of, but very close to, the project reach, which has a measured bankfull area within the range of data scatter of the regional curve bankfull area. If the reach is degraded such that bankfull indicators are scarce or cannot be found, the dimensions predicted by the regional curves are used to quantify the departure of the stream from a stable condition.

8. **Q:** The assessment segment has many riffles, and all of these are very similar or nearly the same. For the Riffle Data (IV.) section of the field form, can you just measure the representative riffle, instead of every riffle in order to expedite the assessment?

   A: No. Part 3.4 of the *Rapid Data Collection Methods* manual states *"Measure the following at every riffle within the assessment segment and record values in Section*

IV.B of the field form…" The riffles and other geomorphic features may look similar, but may actually have different field values. If all the riffles are not measured, weighted bank height ratio and weighted entrenchment ratio cannot be calculated. All measurements are required to be measured at each riffle and riffle cross section in the assessment segment in order to complete Section IV.B of the field form.

9. **Q:** The weather has been dry recently, and my assessment segment is intermittent, but currently has no flowing water, can I collect measurements for Riffle Data (IV.) and Pool Data (VII.)?

   A: Generally yes. These measurements are of the geomorphic characteristics of the stream channel, and may be recorded during a variety of flow conditions. The riffle and pool data are not dependent on the elevation of the water surface at the time of the survey. While it is advisable for practitioners to complete the rapid assessment while the assessment reach is flowing, the process of locating geomorphic channel features during dry conditions can be completed. If site conditions are so adverse during the field survey that these measurements cannot be obtained, the practitioner may choose to either complete the measurements during more favorable field conditions, or may utilize the default value for these parameters.

10. **Q:** How do I measure pool depth ratio in a stream that is not flowing?

    A: The pool depth ratio is calculated by dividing the maximum bankfull pool depth by the mean bankfull riffle depth. During conditions of flow, the bankfull stage in a pool may be found by locating the water surface elevation and measuring vertically up the consensus value found at Part III.A of the field form. When the stream is not flowing, the two alternate methods described below may be used to find the bankfull stage in a pool:

1. No Flow / Bankfull Indicators Observed at Pool: Utilize the bankfull indicators to determine the bankfull stage at the pool.
2. No Flow / No Bankfull Indicators at Pool: Part 3.4 of the *Rapid Data Collection Methods* manual states *"the mean depth can be estimated as the difference between the edge of channel and the bankfull stage"*. The value for mean bankfull depth is calculated in Part III.C of the field form or may be calculated manually in the field as described towards the end (#5) of part 3.2 of the manual.Use this previously calculated value of mean bankfull depth and measure vertically up and level from the toe of slope at the pool to help determine where bankfull would be in a pool. This will provide an approximate measure of the bankfull stage in a dry pool where no bankfull indicators are present.

   Once the bankfull stage is determined at a pool, the user simply measures the vertical distance between the deepest part of the pool and the bankfull stage to find

the maximum pool depth. The pool depth ratio is calculated automatically within the field form. If site conditions are so adverse during the field survey that these measurements cannot be obtained, the practitioner may choose to either complete the measurements during more favorable field conditions, or may utilize the default value for these parameters.

11. **Q:** For our Bank Erosion Hazard Index (BEHI) review, we found that several of the banks had the same BEHI score, in order to expedite our documentation, may we just input the representative BEHI/NBS score on Part IX. of the field form?

    A: No. Please review Part 3.9 of the *Rapid Data Collection Methods* manual for procedures and solutions. The manual states “The dominant BEHI/NBS measurement method assesses all meander bends, whether they are eroding or not, and other banks within the assessment segment that are eroding.” In Part IX. of the field form, please input all data for every bank with an assessed BEHI/NBS score. This data is needed for accuracy of calculations and assists the agencies in expediting field reviews of your assessment.

12. **Q:** Do we need to measure BEHI for non-eroding banks at a meander bend?

    A: Yes. Please review Part 3.9 of the *Rapid Data Collection Methods* manual for procedures and solutions. The manual states *“The dominant BEHI/NBS measurement method assesses all meander bends, whether they are eroding or not, and other banks within the assessment segment that are eroding.”*

13. **Q:** What are the dimensions of a riparian vegetation rapid plot? Should I use a vegetation plot with alternate dimensions if there is a narrow and long buffer along the stream?

    A: Data should be collected in accordance with the Carolina Vegetation Survey EEP Level 3 protocol, which utilizes standard 10 meter x 10 meter vegetation plots. A rapid method field form has been developed for the TN SQT, and is provided in Section 6 of the *Rapid Data Collection Methods* manual, which also includes 10 meter x 10 meter vegetation plots. The dimensions of the vegetation plots should not be adjusted to account for narrow buffers. Users should ensure plots are locatedin areas that provide a representative portrayal of the vegetation present within the assessment reach. Changes to plot dimensions will only be considered in areas where site constrains (property ownership, etc.) occur.

14. **Q**: If there are dead trees in a plot, should these be used in measurements (e.g. such as average DBH?)

    A: No. Only living vegetation should be used in any evaluation of current stream function.

15. **Q:** My assessment reach has a narrow riparian buffer consisting of two rows of trees along the banks, then beyond that the buffer is mowed grass. Where should my riparian vegetation rapid plot be located?

    A: Users should ensure plots are located in areas that provide a representative portrayal of the vegetation present within the assessment reach. Some plots may be close enough to the stream bank to pick up these trees, but placing all plots at top of bank may not be representative.

16. **Q**: What is the minimum number of riparian vegetation plots required for the rapid condition assessment?

    A: The minimum number of plots for the rapid method would be based on an assessment 2% of the total riparian buffer area. For the detailed method, there is also an additional minimum requirement of at least four plots. See page 7, section 2.3 in the Rapid Assessment Manual.

17. **Q:** My assessment reach is immediately adjacent to a road or wide mowed area, then beyond that area is a forested area. How should I measure the buffer width for Part X. of the field form?

    A: Part 3.10 of the *Rapid Data Collection Methods* manual discusses procedures and states *"Riparian buffers… are measured horizontally from the top of the stream bank to the edge of riparian tree/shrub community."* In this case, the buffer width would be zero, since the road and grass zone abut the stream bank, and the forested zone is not adjacent to the stream.

18. **Q:** My assessment reach is immediately adjacent to a road or wide mowed area that is 5 meters wide, then beyond that area, there is a forested area that starts 5 meters from the stream bank. What are the dimensions of the riparian vegetation rapid plot of this area?

    A: Data will be collected in accordance with the Carolina Vegetation Survey EEP Level 3 protocol, which utilizes standard 10 meter x 10 meter vegetation plots. A rapid method field form has been developed for the TN SQT, and is provided in Section 6 of the *Rapid Data Collection Methods* manual, which also includes 10 meter x 10 meter vegetation plots. The vegetation plot would be 10 meter x 10 meter, including both the 5 meter wide mowed or road zone and the 5 meter wideforested zone. Users should ensure plots are located in areas that provide a representative portrayal of the vegetation present within the assessment

reach.

19. **Q:** After determining the SQT reach breaks, how many long-term monitoring reaches are required? Note that this typically applies to mitigation.

A: This entirely depends on the values of the Proposed Condition Scores for each reach. If a stream was determined to have multiple SQT reaches, but each reach has the same exact Proposed Condition Score, then you can monitor one representative location (which would establish a longitudinal profile and cross section which would be extrapolated to the entire reach).

Existing Condition Assessment Spreadsheet

1. **Q:** The evaluation stream segment has areas of solid bedrock bed material, but thereare also some riffles and a small pool, where the bed material is composed of cobbleor other materials. There may be bedrock located underneath the areas of cobble. On the spreadsheet, what should I choose as the “Existing Bed Material”?

A: The practitioner should only select “Bedrock” if the bed material is dominated by exposed, solid bedrock in the bed of the stream. Bedrock may be located underneath other substrate, but in such cases, the practitioner should categorize the existing bed material based upon the bed material that is exposed in the bed of the stream; the underlying geologic layers below the stream bed are not categorized within the rapid assessment and are not quantified when determining if the stream reach is bedrock dominated. “Bedrock” should only be chosen when it dominates thechannel to such as extent that it precludes the development and ability to assess bedform diversity. Bed Form Diversity parameters should not be assessed for stream reaches that are bedrock dominated.

2. **Q:** The weather has been dry recently, and my evaluation stream reach is intermittent. I have collected measurements on the Rapid Assessment Form for Riffle Data (IV.) and/or Pool Data (VII.); however, since the channel is not currently flowing, I don’t observe any riffles or pools. On the Existing Conditions Spreadsheet,may I report values of “0” for “Pool Spacing Ratio”, “Pool Depth Ratio”, and “Percent Riffle”?

   A: Generally no. These reported measurements evaluate geomorphic features of the stream channel. The geomorphic features should be identifiable under a range of flowconditions, including conditions of no flow. Some highly disturbed systems may not have identifiable riffles or pools. Assessors should consider the level of degradation at that site and provide evidence if bedform features are absent. If there is difficulty inassessing the site, the practitioner may choose to either complete the measurements during more favorable field conditions, or may utilize

the default value for these parameters.

3. **Q:** The 2019 *Tennessee Stream Mitigation Guidelines* describe a lower limit ExistingCondition Score (ECS) of 0.4 for highly degraded perennial and intermittent streams.Does the USACE Nashville District recognize this lower limit ECS for perennial and intermittent streams? Has the USACE Nashville District established a lower limit ECS for ephemeral streams?

   A: Yes to both. The USACE Nashville District utilizes the lower limit ECS of 0.4 forhighly degraded perennial and intermittent streams, as described in the *Guidelines*.The USACE Nashville District has established a lower limit ECS of 0.16 for highly degraded ephemeral streams. These lower limit condition scores do not apply to degraded streams proposed for compensatory mitigation and evaluating functional lift.

4. **Q:** We are expecting an increase in Water Quality and/ or Biology. How do I estimatea proposed lift?

   A: If you are not sure about what proposed lift may occur, it may be useful to establish the same Existing and Proposed Condition Score. If the scores improve and are documented during monitoring, the generated mitigation credit can be adjusted accordingly at the end of the monitoring period. Credits will not be given unless an Existing Condition Score was included in an approved submission for a mitigation project, and applicants will be required to monitor water quality and/or biology until the conclusion of monitoring. Establishing a Proposed Condition Score for water quality or biology should be conservative, due to many possible factors that can influence the degree and timelines of recovery.

5. **Q**: I am developing a Watershed Land Use Runoff Score with an upstream catchment area that is rapidly developing, and these areas are not yet shown on available aerial imagery. Furthermore, in the next few years, there will be additional impervious surface (rooftops, pavement, etc.) that will further impact the catchment. How should all of this be evaluated?

   A. You should utilize the most currently available aerial imagery, and to the extent possible, account for the existing new impervious surface at the time you are establishing an Existing Condition Score. This can be done from determining the amounts of new impervious surface from design plans or georeferenced field data. This would provide the most up-to-date accounting for developing the Watershed Land Use Runoff Score. You should not develop the score with what could potentially occur in the future.

Agency Field Reviews

1. **Q:** The regulatory agencies will be field verifying my assessments, how should Iprepare?

   A: It is important that you flag your bankfull indicators on right and left bank at a minimum of three riffles within your reach. Field verification of bankfull is the most critical measurement to review. Please be sure to clearly flag and georeference the location of the beginning/ending of the assessment segment, as well as the location of the stable riffle cross section. This will assist with identifying assessment locationsduring the field review. Georeferenced cross section locations should be included in maps associated with project documentation.

Final Determination of Credits and Debits

1. **Q:** How many significant digits should I round to for the final functional foot value?

   A: Debits and Credits should be rounded to the tenths level. While the 'Project Assessment' tab of the SQT is shown to the hundredths level, and the 'Functional Lift Summary' rounds to whole numbers, the final functional foot value should be round up to the nearest tenth. For example, 33.45 functional feet would be rounded to 33.5 feet.

Compensatory Mitigation Questions

1. **Q:** If we are proposing preservation reaches within our project, do we need toconduct the SQT for these areas?

   A: Yes. In order to propose a reach for preservation, you must develop an Existing Condition Score (ECS). It should be noted that use of standard default scores for any measurement is not allowed for determination of ECS for preservation crediting. The minimum overall ECS for a system to be eligible for preservation is 0.24 for ephemeral streams and 0.6 for intermittent or perennial streams.

Mitigation Banking Questions and Answers from the Tennessee Interagency Review Team (TN IRT)

1. **Q:** Are the Tennessee Interagency Review Team (TN IRT) agencies able to issue a permit for impacts to aquatic resources, where the mitigation bank to be utilized for compensatory mitigation is nearing approval, but not yet approved by the TN IRT?

   A: In limited situations where no other crediting options are currently available,

TDEC has allowed draft permits to go on public notice with an assurance from USACE that the planned credit release will likely occur within roughly 60 days of draft permit going on notice. This exception has only been allowed on a case-by-case basis and impacts to resources cannot occur until actual mitigation credits are purchased, and the liability is transferred from permittee to mitigation provider. The Corps will only accept banks with available mitigation credits as compensatory mitigation associated with a permit decision.

2. **Q:** Where does using credits from a bank in the same river basin as an impact, but not in the bank's approved service area fit in the mitigation hierarchy?

   A: All Department of the Army (DA) permit decisions requiring compensatory mitigation would consider whether the proposed mitigation (Mitigation Bank, In-Lieu-Fee, or Permittee Responsible Mitigation (PRM)) is the most environmentally preferable option to offset authorized impacts. The Corps evaluates the most environmentally preferable mitigation during evaluation of the applicant's proposed mitigation plan, while TDEC prefers to site mitigation as close to the impacts as possible.

   For purposes of addressing USACE mitigation requirements, a bank's primary service area will have priority over secondary service areas of other approved banks, where appropriate credits are available. The secondary service area may be utilized for compensatory mitigation for a DA Permit if there are no available credits within a bank's primary service area. If either of these options are not available, then PRM may be considered.

   Please note that TDEC does not have the same "Hierarchy" in Rule as the USACE.

   - TDEC's evaluation of proposed mitigation must provide sufficient offset to the site-specific resource values lost. This sometimes also ties into proximity component (below), and also can include all manner of site-specific resource issues (T&E, ETW, unique resource type, other Designated Uses, etc.)

   - Per TDEC Rules, proximity is clearly a preference – the closer the mitigation to the impact site, the higher the priority.

   - Per TDEC Rules, timing of the mitigation & temporal loss is also a mitigation preference factor. Mitigation is required to be conducted concurrent with or before impacts. Though not explicit, this would result in banks receiving preference over ILFs.

   - TDEC does consider it an obligation as a member of the TN IRT, and a signatory to Mitigation Banking Instruments (MBIs), to respect and adhere to the service areas established for banks, in terms of prioritizing third-party mitigation. However, service areas, even if impacts are within the primary service area, may not be

preferred over other mitigation, such as PRM which may be closer to the proposed impacts (see response #2 above).

- TDECs concern over credit reservation letters and the contracts that are now often being used in place of a credit reservation letter is not solely that they are challenging to review, but that they are often unsuitable to fulfill the applicant's mitigation requirements. For instance, a contract or credit reservation letter for credits that have not yet been released will generally not fulfill TDEC requirements for a complete mitigation plan, except in the circumstances described in our response to TERA comment #1.

3. **Q:** Is there a standard practice that the Corps or TDEC have for making sure that there are no bank credits available before a different mitigation method is used? Is this just on the responsibility of the permittee? If so, do the agencies require documentation that credits available via banks have been investigated?

   A: For third-party mitigation, the Corps and TDEC uses RIBITS to search for available credits relative to the impact location. One shortfall of using RIBITS in this way is that it does not capture when credits have been reserved, often requiring regulatory agencies or applicants to contact each provider to determine if credits are actually available for reservation. One item to note, mitigation proposals placed on public notice by the Corps are often the mitigation proposed by the applicant. During agency review, each agency will review the proposed compensatory mitigation, and the agencies may require adjustments to the mitigation plan and mitigation source to comply with all applicable procedures.

4. **Q:** For mitigation sites, how long should vegetation be planted prior to initiation of the first monitoring period?

   A: Planted vegetation must be in the ground for at least 180 days prior to the initiation of the first year of monitoring (Year 1). Minor issues observed during the as-built site visit shouldn't generally affect the reporting schedule. Major issues observed during the as-built site visit that may require replanting would restart the 180-day clock. Additionally, the TN IRT supports submission of the Year 1 monitoring as defined in the MBI and accepted by the TN IRT. Any additional permit-required monitoring for TDEC ARAPs will be due as specified in the permit.

5. **Q:** After a mitigation project has been constructed, how should TN SQT monitoring reaches be established?

   A: The TN IRT is currently working to develop more long-term guidance which will be incorporated into a future update of the TN SQT manual, but for now, the information presented here should be considered. The TN SQT methodology establishes that stream reaches should be assessed at 20x bankfull width or at least two meander wavelengths, whichever is greater. This should continue be the default guidance used for monitoring reaches. However, there are instances where this may

not always be the case. Some examples as described in Part 2.1 (Reach Segmentation) of the Field Manual include:

- variability of thalweg and cross-section profiles
- breaks in slope
- breaks in significant tributaries entering
- changes in soils
- changes in valley width – see manual guidance

It should be noted that in an instance where an TN IRT member notes an area of instability from visual monitoring, additional cross sections may be required.

In terms of monitoring requirements of a mitigation project, we would like to clarify that during the monitoring period, longitudinal profiles are not required for the entirety of the work limits. Please see Section 2.1 of the Rapid Data Collection Manual for procedures for reach segmentation and establishing reach breaks throughout the project. Section 2.1 describes the methodology for establishing stream reach assessment segments or a representative sub reach of each stream reach for purposes of measuring floodplain connectivity, lateral stability, and bed form diversity; these require measuring the cross sections and longitudinal profile within the stream assessment segments. Please refer to the manual for more information. It should be noted that in an instance where an TN IRT member notes a very long stream reach, an area of instability, or other concerns requiring additional data collection, additional profiles and/or cross sections may be required.

Additionally, per page 40 of the Stream Mitigation Guidelines, as-built surveys must include “vegetation information (type, number and location of species planted)”; permanent vegetation plots are to be established at this time. The MBI template indicates that during the seven-year monitoring period, not all monitoring reports will include the same information, and the TN IRT has often required a minimum of five instances of vegetation monitoring during the seven-year monitoring period, in addition to the required as-built survey. For sites with unusual vegetation concerns, the TN IRT may require alternate monitoring criteria.

6. **Q:** Can you provide some guidance on developing performance standards?

A: Performance standards should follow the requirements established on Page 39 of the 2019 Tennessee Stream Mitigation Guidelines. Depending on site conditions, proposals, etc., mitigation sites can have varying additional performance standards. Performance standards are often required to demonstrate a site is on a trajectory to reach a status of functioning and that the site is performing as proposed. Performance standards are not always directly tied to what is measured by the TN SQT.

In terms of TN SQT requirements, per page 40 of the Stream Mitigation Guidelines, at a minimum, floodplain connectivity, lateral migration, and riparian

vegetation should be raised to 'functioning' prior to project closeout. Depending on site constraints and geology, some projects may have to address bed form diversity. Any variation from those criteria would be on a case-by-case basis.

The TN IRT is working to publish a standardized performance standard template, which will provide consistency and help streamline reviews. Additionally, to streamline reviews in the future, the TN IRT is currently updating the MBI template with 'locking' functionality. Once comments have been resolved in various portions of the MBI, this will essentially lock portions of the MBI from additional editing, which will reduce the time required to review entire revised versions of MBIs.

The TN IRT requests that applicants provide a memo page with a document location/page number noting where an MBI comment has been addressed is another streamlining procedure. This will ensure that agency project managers can quickly find where a comment has been resolved and reduce additional review time.

7. **Q:** My company received TN IRT Prospectus comments on a proposed mitigation site, and now has received entirely new comments at the MBI stage. How can these be resolved?

   A: The TN IRT strives for a high level of consistency on project reviews; however, it is critical that there is ultimately consistency between approved mitigation projects. While we try and ensure that comments are not missed during review of Prospectus and Mitigation Banking documents, sometimes things are inadvertently missed, or data/items are not provided by the sponsor for review until later stages of the TN IRT review. We would note that for specific items that are outside of the range of normal bank approvals (e.g., things such as reduced riparian widths due to site constraints, etc.), it is beneficial for the sponsor to call out that information specifically in mitigation documents.

8. **Q:** Can you provide guidance on when a project would be eligible for an accelerated credit release?

   A: USACE Nashville District is in the process of developing guidance for implementing accelerated credit releases. This guidance will be fully vetted with the TN IRT and provided to mitigation practitioners. When completed, this document will be put onto public notice to provide an opportunity for public comment. Until that guidance is established, the decision to grant an accelerated credit release schedule will be made on a case-by-case basis.

9. **Q:** In some other states, a portion of credits associated with the as-built release are released after site grading is complete, but before planting has been initiated. This is especially useful in situations where site grading is completed during the growing season and the site is essentially built, but it can't be planted until the dormant season. Would the TN IRT consider this?

A: In general, the TN IRT is open to phased credit releases on a case-by-case basis. Since each site and circumstance will be different, and we do not propose to create a defined standard on phased credit releases at this time. For accelerated credit release schedules, we can consider releases for areas where plantings have been successfully established, but not for areas where plantings have not been completed. The TN IRT generally does not support credit releases without viewing the site.

10. **Q:** Would drone footage or other means of site documentation potentially substitute a site walk before every credit release?

    A: Drone footage and other means provide valuable information and are encouraged. However, the TN IRT generally requires a site walk prior to credit release. The site walk is particularly critical with the move towards accelerated credit release and the corresponding reduction in number of credit releases and reduction in site inspections. The site walk may also reveal adaptive management needs earlier, rather than later in the process, which will benefit all parties, including the sponsor.

11. **Q:** For credits associated with Biological and Physicochemical uplift, can you provide clarification on the TN IRT credit release policy for these parameters?

    A: Due to the natural variability associated with the science of stream restoration for physiochemical and biological parameters, practitioners must demonstrate ecological lift that is showing improvement across a minimum of two monitoring periods after as-built construction, with data collection over three consecutive years. The TN IRT supports a credit release of 25% of documented lift in both Years 3 and 5, with the remaining credits available at Year 7 based on the measured lift between the initial Existing Condition Score (ECS) versus the actual measured Proposed Condition Score (PCS).

12. **Q:** Can you provide guidance on when an area within the riparian zone, which has developed new wetlands as a result of site construction, would be eligible for the TN SQT 5% credit multiplier (per bank) for a stream/wetland complex? This scenario assumes that these new wetlands are somehow being improved (planting, increased hydrology, etc) and will a final delineation at closeout be sufficient to determine the final extent of these wetlands as it relates to this crediting scenario.

    A: The following guidance applies to Version 1.0 of the TN SQT. If wetlands are created unexpectedly during a mitigation project, those could potentially qualify for a stream/wetland complex multiplier (5% multiplier, per stream bank, of the SQT condition score), provided those wetlands are delineated by the sponsor at the end of the monitoring and are located within 25 feet of the stream. Such credits, if approved, would be released at the final monitoring closeout release. We would note that the pending updates to the TN SQT methodology proposes to include a crediting scheme for stream/wetland complexes within the parameters of the TN SQT itself, rather than a via a percentage-based multiplier currently being utilized.

For additional wetland features that may form as a result of a mitigation project, or in situations where wetlands may exist on the site, crediting will be assessed at the end of the monitoring period. If you would be requesting additional stream credit (currently 5% SQT credit for each eligible streambank) as a result of newly formed or existing wetlands, you would be required to have a minimum 50-foot buffer for the stream, and the wetland would be required to be within 25' from the stream bank. If you wish to qualify for wetland mitigation credits, wetland credit generation eligibility starts outside of a 25-foot stream buffer zone directly adjacent to the stream. Essentially this means that the first 25 feet lateral from the stream are not eligible for wetland (ratio-based) credit generation, with eligibility for the stream/wetland complex credits (5% condition score multiplier, per qualifying stream bank) starting inside the first 25 feet of the riparian area. Eligibility is contingent on TN IRT approval of the proposal.

Practitioners would be required to document and submit new SQT and/or wetland forms (as appropriate) for the new features, and also demonstrate that the stream restoration did not impact existing wetlands through an updated wetland delineation at the conclusion of monitoring. Newly formed wetlands and wetlands that have been restored or enhanced (demonstrated ecological lift), will generally qualify for the stream/wetland complex multiplier. Note that these wetlands will need to have demonstrated ecological uplift in some way (i.e. vegetation plantings, control of invasive plant species, etc). The amount and type of wetland monitoring required must be consistent with the type of wetland mitigation proposed, i.e. restoration, enhancement, or preservation. Approval is required by the TN IRT on a case-by-case basis.

13. **Q:** In the TN SQT, when should I conduct a piece count of Large Woody Debris (LWD), and when should I conduct the Large Woody Debris Index (LWDI)?

    A: The current guidance on LWD is that for more complex projects, such as typical mitigation projects, the LWDI is necessary. The use of the rapid assessment piece count is more applicable for one-time rapid assessments associated with the debit tool. The LWDI is necessary to evaluate that not only sufficient LWD has been introduced, but that it is implemented in a way that will provide the greatest ecological benefits. This is significantly more information than can be gleaned from the piece count data method. Procedures are being updated and clarified in the updated SQT.

    In terms of counting buried log sills/log veins towards LWDI, the TN IRT needs to be able to verify that the placement of these structures is consistent with design plans. To that end, the TN IRT should be able to field verify that the actual structure exists. Georeferenced photos of the structures prior to burial could be provided to help document the presence of the structures. For LWD that is somewhat exposed, we can verify the materials visually, or use a shovel to scrape down a short depth to verify.

14. **Q:** Can you provide clarification about how data is viewed in terms of dry years, variable flow regimes, and other hydrologic variability over the course of monitoring?

    A: Due to natural variability of groundwater/hyporheic flows, the TN IRT would recommend the use of instrumentation (such as monitoring wells) when HDs don't provide sufficient information to document site hydrology. Prior to restoration activities, it is a good practice to collect enough groundwater and/or stream flow information across a mitigation site to characterize baseline conditions. This can be compared over time to characterize dry, normal, and wet years, and may be compared to hydrologic conditions present after the restoration activities.