

General Statements/Policy

1. **Comment:** On Page 26 of the Draft Guidelines, the first sentence of middle paragraph states: "Please note that USACE may require compensatory mitigation for unavoidable impacts to ensure that an activity requiring a Section 404 permit complies with the Section 404(b)(1) Guidelines." It would be a great benefit to all potential permittees if TDEC and USACE could get on the same page.

Response: One of the driving factors for the changes in rules and stream mitigation guidelines is to better align state and federal regulatory processes where possible to improve consistency and efficiency of the permitting programs, as well as better customer service. The Division and the USACE have worked closely throughout this process to best align mitigation requirements. However, in certain situations the differences in the agencies' governing rules and regulations may preclude complete alignment.

- 2. **Comment:** I think that the proposed stream mitigation guidelines will take away the "guess work" of how many credits a potential mitigation site will generate. With the new proposed guidelines, the credits (or functional feet) generated will be determined by a scientifically defensible methodology. In my opinion, the transparency, consistency, and scientific defensibility make the proposed guidelines an improvement to the current guidelines (2004) and the end result will be no net loss of resource value across the State. I also like the option to get "extra credit" for water quality and biology if the permittee chooses to do so.
- 3. **Comment** : We applaud Tennessee's efforts to integrate the best available science into quantifying the ecological loss associated with development activities, and to ensure the ecological lift achieved from mitigation practices and policies fully offsets any losses

Response: Thank you for your comments. The Division has worked to develop a scientifically defensible, repeatable, and transparent process.

4. **Comment** : We suggest adding hyperlinks to definitions, HUC maps, ETWs, ORNWs, 303(d) listed waters, ecoregions, regional curves, and other specific waters, geographic areas, diagrams, or vocabulary terms that may help an applicant better utilize the document

Response : The Division recognizes how links may initially provide better utilization of the document, however, frequent web address changes and updates to all of TDEC's webpages will equate to broken links in a short amount of time. The Division will strive to provide useful information on the TDEC Compensatory Mitigation home page and update those site links as often as possible.

5. **Comment:** TDOT requests that the 2004 Stream Mitigation Guidelines remain in place until clarification and revision to the proposed 2018 guidance is complete and a transition plan is in place.

Response: The Division has revised the 2019 Stream Mitigation Guidelines to replace the 2004 Guidelines. We have been working with the US Army Corps of Engineers for 5 years to transition compensatory mitigation service providers.

6. **Comment**: It is anticipated that the depressed market of available mitigation credits will be further impacted by the proposed reduction of resource lift/credit value. This lack of available mitigation credits is anticipated to negatively impact transportation project schedules statewide.

Response: We believe the mitigation guidelines and a stream functional assessment will improve the availability of mitigation credits in the market. Currently there are approximately 30 potential compensatory mitigation banks in development or approved across the state. This is a significant increase from 5 years ago. It appears mitigation credit providers have more confidence in the transparent and repeatable nature of the new system.

7. **Comment:** TDOT is concerned that no other methodologies or tools can be considered within a reasonable timeframe in order to receive permits and meet project delivery schedules for transportation projects.

What other tools/methods are accepted? Can the ratio method still be used if similar performance standards are incorporated?

Response: The Division prefers the TN Debit Tool and the TN SQT to determine credits and debits. Along with the rest of the Stream Mitigation Guidelines, they are intended to ensure reasonable timeframes may be met during the permitting process by supplying a standard, predictable, and accepted method for determining credits and debit requirements. However, any other scientifically defensible method may be submitted to the Division for review and approval. The timeframe of review and approval will depend on the assessment method complexity, conformance and adaptability to Tennessee systems, and the availability of credits generated using the same system.

8. **Comment:** The assignment of new values to mitigation banks where TDOT has already purchased credits can result in hundreds or even thousands of credits being worth a fraction of their original value. TDOT is concerned that these decisions potentially impact millions of dollars in tax payer funds.

Response: Credits at established mitigation banks will be converted to functional feet when the debits being offset are in the same unit. The Division recognizes pre-purchased credits for activities that have not yet occurred may be subject to an adjustment. However, we cannot be held liable for business decisions TDOT has made years in advance, irrespective of guidance or rule changes.

9. **Comment:** TDOT recommends that formal training on the SQT and Debit Tool be available prior to full implementation.

There is no certification or training requirement to perform these assessments, which may warrant the submittal of insignificant data.

Will TDEC provide training to the engineering community in the use of these tools?

Response: The Division conducted a well-attended 3-day training for consultants in the fall of 2018. We have also held webinars, pre-conference sessions at TN American Water Resources Association conference, and dozens of other educational events focused on the new tools over the past five years. We have also worked closely with TDOT Permitting and Ecology staff and conducted multiple hands-on training sessions with them. We will work to conduct additional training courses for practitioners and staff as time permits over the next 2 years, which will help with the quality of submittals. Transitions to new methodologies always include a training and adjustment period. There are no plans to implement a certification program at this time. As an additional resource, there are private consulting firms that offer trainings on the use of the Stream Quantification Tool.

10. **Comment** : It would be beneficial to publish a description of the minimum qualifications for persons who would make stream assessments required to use the debit calculator.

Response : Because ARAP situations range from the simple to extremely complex, the Division does not intend to specify qualifications. However, qualifications for some aspects of stream assessment, such as conducting benthic surveys, are specified in other Division documents and could be referenced.

11. **Comment:** The proposed mitigation guidelines impose a significant cost increase to permit applicants. The debits owed under the 2004 mitigation guidelines will be reduced by 20-45 %; however, the credits being generated at mitigation sites are on average 40-80% fewer credits for previously completed work.

Response : The above percentage ranges are speculative. It is unclear what assumptions the commenter made to create these ranges, and due to the change in currency and methodologies on both the debiting and crediting process it is not valid to focus solely on the number of credits and debits, or the per-unit cost of a "credit". The functional-foot methodology and other aspects of the SMG are designed to ensure the amount of permanent resource loss from impacts are offset by an appropriate amount of functional lift of resource value to meet the compensatory mitigation requirements established by rule. Based on our experience with the TN SQT and Debit Tool using real project data, the balance between the amount of mitigation required to offset impacts as a whole is not changing substantially, but will be more accurate and transparent on a site-by-site basis.

12. **Comment:** Has cost/benefit analysis been done to determine the cost to an applicant for doing this work?

Response: The cost of actually performing the work associated with mitigation activities will not change. The Division does not establish prices for third-party credit providers. The marketplace, price of land, and demand for credits will drive credit costs. The change in methodology and currency will change the amount of impact offset by a credit, and the amount of credit a typical project will generate in a similar manner.

13. **Comment:** We do agree that credits should be based upon the amount of functional lift produced by a project; however we believe the functional lift should be used as guidance for the IRT in approving credit ratios, and guidance for the practitioner in choosing a mitigation site/approach, rather than a method for credit generation.

Response: Part of the intent of the proposed changes is to create a predictable, consistent, and defensible methodology that will allow constituents like mitigation bankers and TDOT to effectively plan and budget for mitigation. The commenter's suggestion does not accomplish these goals.

14. **Comment**: We applaud TDEC for recognizing that function-based mitigation, instead of ratio-based approaches, is critical to truly comply with the Clean Water Act's "No Net Loss" standard. Tennessee's ARAP rule 0400-40-07-.04(7), requires mitigation sufficient to compensate for the loss of resource values from existing conditions. We are pleased to see TDEC shift from the 2004's *Stream Mitigation Guidelines* ratio-based lift and loss determination, to a truly function-based approach.

Response : The Division appreciates the supportive comments.

15. **Comment:** Commenters object to the issuance of the Guidance as "guidance" rather than using noticeand-comment rulemaking. The Guidance appears intended to bind third parties. As such, Commenters and the public generally are deprived of the ability to challenge the Guidance absent the use of the procedures under the UAPA for notice-and-comment rulemaking. If the Guidance is not intended to "bind" third parties, it must specify why and under what conditions TDEC considers it not to have such effect.

Response: Guidance is not legally binding, but is intended to provide clarification on implementation of binding Rule and Statute. Despite this, the Division has chosen to notice the proposed changes to Guidance for public comment.

16. Comment: Please clarify how TDEC will be entitled to enforce violations of the Guidance against regulated entities alleged to be in violation of such non-binding documents. Please also clarify how violations of the provisions of various guidance documents, or failure to require that guidances or policies be followed in a particular instance, can support or a citizens' suits under CWA Section 505. To the extent that the use of the Guidance is intended to undermine the ability to TDEC to enforce the law, or of citizens to avail them of the remedies under CWA Section 505, Commenters object thereto.

Response: The Guidance is meant to inform mitigation for physical alterations to waters of the State which require mitigation. The Guidance is not directly enforceable, because it does not create legal requirements. Rather, it reflects the Division's interpretation and application of the mitigation requirements established in Rule Chapter 0400-40-07, which are enforceable. Those mitigation requirements will be established in Aquatic Resource Alterations Permits, which are legally enforceable under the Tennessee Water Quality Act. To the extent that those permits also serve as CWA Section 401 certifications, federal law will also apply.

17. **Comment:** Similarly, please clarify how citizens may challenge the decisions of interagency review teams (IRTs) with respect to antidegradation decisions in particular, and their relationships to citizens' rights under CWA Section 505.

Response: Decisions of the Interagency Review Team (IRT) are not directly challengeable because they are not final agency actions. ARAPs incorporate the Division's antidegradation decisions. ARAPs and other permits issued by the respective agencies may be challenged as provided for under law.

18. **Comment:** If TDEC actually requires this data to be collected and to be analyzed, it could substantially slow the process of performing mitigation projects and/or the creation and sale of credits. Additionally, collection of all of the data is likely to substantially increase barriers to performing mitigation projects and/or entry into the business of mitigation banking, as well as increase costs for project proponents, both of which are quite likely to reduce mitigation and decrease the creation of mitigation credits. Alternatively, if the data is collected but not analyzed, that process will effectively be a "rubber stamp" of applicant-collected and generated data, which will simply decrease the credibility of the program and also not result in performance of necessary mitigation projects. Further, collection of all the data contemplated may also decrease the amount of credits created.

Response: The Division disagrees. One of the drivers behind these proposed guidelines is our interaction with mitigation professionals both locally and out of state. Creating a scientific and consistent process for calculating mitigation debits and credits is critical to bringing those companies into TN to get more heavily involved in mitigation projects and generating more projects. The tool was developed with a lot of input from those very professionals, and should in the long run speed up the creation and sale of credits. According to those professionals, most of the data collection involved is no more burdensome than under current systems, and our review of the data collected will be easier and more soundly based than previously, not less so.

19. **Comment** : The EPA expresses support for the updates to the TN Stream Mitigation Guidelines and implementation of the SQT, which will help provide a predictable and consistent approach to evaluating compensatory mitigation projects and quantifying ecological loss from aquatic impacts. The rigorous

scientific development of the SQT included: (1) refining riverine mitigation performance standards and success criteria using ecological data from reference sites; (2) running a comparative analysis of the SQT on existing stream mitigation sites; (3) development of a tool that calculates the quantifiable differences between existing condition and the proposed stream condition; and (4) development of a debit tool for aquatic impacts that helps refine the required compensation. The science-based tool provides a functional assessment methodology in support of the 2008 Rule. It additionally improves the link between ecological loss from permitted aquatic impacts and the compensatory mitigation requirements to offset those impacts.

Response : The Division appreciates the supportive comments.

20. **Comment:** First, one of the more significant factors in the failure is the fact that the system created by the Regulations and the Guidance requires mitigation of "Existing Conditions" only. A substantial additional market for mitigation credits as well as to address cumulative impacts, would be to track, and require those who want to further degrade Tennessee's streams to ameliorate, the current condition of the streams they seek to alter. The Louisville District Army Corps of Engineers operates an apparently successful mitigation system in Kentucky, Indiana, and Illinois that generally requires one-to-one mitigation per linear foot of stream, which implicitly assumes the stream is at its highest functioning level at the time of impact.

Response: Applicants and landowners have no legal responsibility under rule to do more than provide mitigation for the existing resource value. However, these guidelines seek to create incentive to provide more than just the minimum necessary to meet permit requirements by providing a consistent method to calculate ecological lift. The more lift involved in the project, the more credits created, with associated economic value. This will help incentivize higher quality projects as well as targeting those stream segments that are currently the most impaired, thus resulting in the most lift. A one-to-one ratio of mitigation per linear foot of stream impact may assume the impacted stream is at its highest functioning level at the time of impact (which is likely not accurate), but it also assumes the mitigation stream is at its lowest functioning level prior to compensatory activities, and that it is lifted to its highest state through those activities – this fallacy in practice results in less actual resource lift than will be quantitatively demonstrated through the TN SQT methodology.

21. **Comment:** There is confusion about what this tool and the requirements will be for the applicants for ARAPS. It is my understanding that the evaluations for Mitigation will only be required on Individual ARAPS and not general ARAPS.

Response: The commenter is correct. Compensatory mitigation will not be required for activities receiving coverage through a general Aquatic Resource Alteration Permit (ARAP).

Introduction

22. **Comment** : The mitigation hierarchy is critically important to ensure the protection of the state's aquatic resources. The TN SQT or Draft Mitigation Debit Tool should be used to ensure avoidance and minimization of stream impacts, particularly streams with high existing functional values. Mitigation should occur only when avoidance and minimization efforts have been exhausted.

Response : The Division agrees with the commenter, and is hopeful that these proposed changes will increase incentives to avoid and minimize. In addition the ARAP Rules specify that an alternatives analysis (including avoidance and minimization efforts) must be conducted for any Individual Permit, regardless if mitigation is proposed.

23. **Comment:** TDOT recommends removing "The rule provides that all mitigation for impacts to jurisdictional streams must occur in Tennessee". Mitigation occurring within the same watershed as the impact should not be restricted by the state boundaries.

Response: The requirement for mitigation to occur in-state is provided in rule; this proposed language is needed in order for the guidelines to come into compliance with the rule. As a state agency, Division staff have no authority to conduct investigations or enforcement outside of Tennessee, and impacts to the state's waters should logically and ethically be mitigated for within the state's boundaries.

24. **Comment:** TDOT recommends the ARAP rules specify a buffer width "At a minimum, all new or relocated streams must include a vegetated riparian zone, demonstrate lateral and vertical channel stability, and have a natural channel bottom."

Response: There are no minimum buffer widths required through this guidance. Stream relocations must maintain or improve the existing condition once the relocation has occurred. Therefore, each site is unique in the buffer width requirement. If the practitioner is attempting to produce credits beyond replacement of the relocated stream, the channel must meet the minimum requirements of compensatory mitigation projects. Mitigation for impacts to streams must be developed in a scientifically defensible manner approved by the Division that demonstrates a sufficient increase in resource values to compensate for permitted impacts.

25. **Comment:** It is TDOT's recommendation that alternative methods supported by Regional EPA and USACE should be accepted as scientifically defensible methods.

Response: These proposed changes have been formulated in full cooperation with both EPA Region IV and USACOE participation, and are intended to provide a reasonable level of flexibility. See Section 5.2.1, paragraph 2 "...or other scientifically defensible method as approved by the regulatory agencies."

26. **Comment:** TDOT recommends highlighting the importance of the following paragraph, and moving it to the beginning of the manual: "Please note that TDEC and the USACE regulatory programs operate under different authorities, rules, and regulations, and therefore activities that require permits and mitigation from one agency may not require permits or mitigation from the other. Questions about specific permitting and mitigation requirements should be directed to the appropriate agency, and coordination with both agencies early in the development of projects is encouraged".

Response: The Division agrees. That paragraph is in the Introduction on the second page of the document. We consider that the beginning of the manual.

27. **Comment** : Whenever it appears throughout the document, unless the context is the benefits or services provided, I recommend replacing the term "aquatic resource values" with "aquatic resource functions". The word value implies a benefit or worth that something provides. Those benefits are related to the functions. While functions can be measured and analyzed because they are processes, values are tied to societal importance and worth and, because of that, are much more difficult to quantify. So, the relationship between functions and values **is not so direct** that values (and therefore, value losses due to an activity) can be quantified just by measuring the functions.

Response : The use of the word 'values' relates to the language in the ARAP rules. However, the Division has reviewed the proposed language for places where the word 'functions' would be more appropriate. It should also be noted, per the commenter's last sentence, that the Division's inclusion of a minimum existing condition score reflects this very point.

28. **Comment** : While the ARAP Rule prioritizes mitigation methods as follows: restoration, enhancement, preservation, creation, or other effective measures, this is not the same as the 2008 Federal Mitigation Rule, and that should be noted.

Response : The Division believes that pages 7-9 of the Introduction make clear that ARAP rules and the Mitigation Guidelines differ in some respects from the Federal Rule. Also, Section 5 of the document is explicit in noting differences in mitigation preferences between the state and federal agencies.

29. **Comment:** TDOT recommends a more cohesive alignment on approved mitigation between both TDEC and the USACE so mitigation required by one agency is also recognized by the other. This alignment will avoid double mitigating for the same site.

Response: The Division agrees, which is why the Division has worked in partnership with the USACE over the past five years to develop a quantitative assessment methodology for credits and debits that both agencies could use in support of their respective programs. However, due to the differences in the agencies' governing rules and regulations, there may be situations where mitigation requirements cannot align completely. It is the Division's experience that true "double-mitigation" for a project is quite rare.

Section 2: Resource Types

30. Comment: TDOT recommends updating the term de minimis to be more consistent with updated rules.

Response: The term "de minimis" degradation is not defined by the guidelines. It is defined in the State's Water Quality Standards and that definition applies to this guidance.

31. **Comment:** Streams with available parameters in the past have not required justification to use in-system mitigation. TDOT recommends that this practice continue to be accepted for streams with available parameters.

Response: There is no requirement for mitigation to be in-system for streams with available conditions, unless that water is also an ONRW.

32. **Comment:** Section 2 states that projects proposing activities that will result in greater than de minimis degradation to an unassessed jurisdictional stream will require a water quality assessment to determine the antidegradation status. Incorporating water quality assessments for every unassessed stream into feasibility studies and hydrologic determinations for potential development sites places added burden on the development community. Furthermore, it should not be the responsibility of the permit applicant to perform water quality assessments for the State.

Response: The proposed language does not specify that such an assessment would always be the responsibility of the applicant. Antidegradation surveys are usually performed by Division staff.

Section 3

33. Comment: How will secondary impacts to the water resource be measured and applied?

Response: While the commenter makes a valid point, the Division is unable to measure and demonstrate lost resource value of aquatic resources from secondary impacts at this time.

34. **Comment:** Please define "a significant loss of streambank vegetation and canopy may result in an appreciable permanent loss of resource value".

Response: Some riparian impacts can be of a magnitude sufficient to cause negative changes to the aquatic community or other violations of water quality standards, including channel destabilization and temperature increases.

35. **Comment:** TDOT recommends that guidance is provided defining the requirements of an acceptable alternative analysis prior to implementation.

Response: This guidance document does not require an alternatives analysis for compensatory mitigation; this is a requirement of any Individual ARAP as part of avoidance and minimization. The requirements therefore for alternatives analysis would be better defined elsewhere than under Stream Mitigation Guidelines.

36. **Comment:** TDOT recommends adding conditions that omit mitigation requirements for structures and maintenance activities that were previously mitigated, if proof of previous mitigation can be provided. The addition of such conditions will address the problem of double mitigating for structures that have already been mitigated for in the past.

Response: Thank you for the suggestion. The Division will accept proof of previous mitigation that includes a real property protection instrument, to prevent double mitigation.

37. **Comment:** If the aquatic resource and biological community scores indicate no functional loss, then there should be No Mitigation Required. Furthermore, if there are no direct impacts to the stream channel, doesn't this statement attempt to extend State jurisdiction beyond what is allowed by law?

Response: No. The commenter is correct that projects determined to result in no functional loss would not require compensatory mitigation. These guidelines apply only to activities that require coverage under ARAP rules, so the proposed language does not extend state jurisdiction.

Section 4 Determining Resource Value Loss

38. **Comment:** As currently written, we believe that the Guidelines will overestimate required mitigation and put an undue burden on permittees with costly expenses developing data to assess existing conditions.

Response: The Division disagrees. The 2019 Stream Mitigation Guidelines couples the impact activity tiers with an existing condition score to significantly reduce the amount of debits needed per impact compared to the 2004 Stream Mitigation Guidelines. We believe this is a more equitable and precise assessment of resource loss. In addition, the Guidelines provide maximum flexibility for a permittee to decide on a case-by-case basis how much data to collect to assess existing conditions.

4.2 Impact Types and Descriptions

39. **Comment:** How would multithread channels be calculated? What about wetland/stream complexes with multiple flow paths?

Response: Braided channels as sometimes occur in west TN would be scored as a single channel. Wetland/stream complexes can vary and will be considered on a case-by-case basis.

40. **Comment:** How does reach runoff apply to the ARAP program and assessment permit required mitigation? Reach runoff is and should be addressed under the NPDES Stormwater Program, not the stream mitigation guidelines.

Response: Reach runoff is one of many stream functions that we propose to award credits for improvement in a mitigation project, and factor into a conditional assessment. It is not otherwise regulated under the ARAP program.

41. Comment: How were the Impact Tiers determined?

Response: See Section 4.1, paragraph 1 for a brief description of Tier development.

42. **Comment** : We suggest adding representative photos throughout the document to help clarify the descriptive impact tiers.

Response : The Division agrees and has provided an Appendix with example photographs of typical impacts belonging to each Tier and Impact Type.

43. **Comment** : Why are specific footages set as thresholds in some of the impact types ? The tier is based on the functions effected, not the dimensions of the impact. The quantity is captured in another part of the debit tool. It doesn't seem to make sense to add linear feet descriptions on any of the tiers.

Response : Most of the specific footages used relate to conditions already specified in general permit language. In other instances, the Division believes that some practical specific limits or breakpoints are needed to distinguish between Impact Tiers.

44. **Comment** : Can the specific linear footage references be eliminated in the "Tiers" section of this document? These do not necessarily apply to USACE and we are not sure the lengths are really needed to be included here. USACE may require mitigation for less than 200 feet, and this verbiage somewhat eliminates this as an option for a 100 LF culvert. This document would be more versatile and usable by USACE if the length references are removed from these Tier discussions. Perhaps the TDEC thresholds can be discussed elsewhere in the document, and that entire section could be just marked as "not applicable" to USACE. Separating these two topics (thresholds vs. tiers) would be more versatile and usable for both agencies

Response : See response to Comment #43 above. The Division does not believe it is necessary to state in every section of this document that TDEC's mitigation guideline language may not apply to a federal agency in every case. The Division believes the thresholds are a necessary component for this document to provide guidance on TDEC requirements due to the nature of ARAP General Permit limits, while acknowledging that this is one area of the Guidelines that may depart from federal permit requirements in certain cases.

45. **Comment:** Public Works agencies should have reduced tiers. Alternative crediting should be applied for activities in and around structures/development that were conducted prior to the CWA and other rules enacted since the implementation of Phase 1 and 2 SW requirements.

Response: Impact Severity Tiers were proposed by activity and the potential for impact to an aquatic resource from an activity, and any associated appreciable loss of water resource value must be considered irrespective of the applicant. Under this proposed change to "existing condition", impairments to a stream channel resulting from general urbanization or upstream, unrelated activities will not be factored into permitting or mitigation debiting/crediting requirements.

46. **Comment**: Tiers 1-4 list impacts to riparian vegetation as a functional loss that will require mitigation. Again, this appears to be over reaching, as there are no direct impacts to the stream channel. Additionally, if riparian zones were regulated, the Guidance should define the amount of riparian zone (buffer distance) that would be regulated. There should be a percentage of riparian zone loss associated with each tier of impact, and not left open to the discretion of the application reviewer. For example, an encroachment of 10 ft. (partial removal) within a 50 ft. buffer should not have the same impact value as a 50 ft. encroachment (complete removal).

Response: The commenter is correct, the ability for the Division to regulate riparian area is limited to stream side and canopy cover as noted in the ARAP rules. The Tier descriptions indicate significant elimination and suppression of the riparian corridor.

47. **Comment** : Vegetative stabilization is listed as impact severity tier 0, and is also listed elsewhere as a mitigation treatment. By definition, isn't a mitigation treatment a non-impact? What is the point of Impact Tier 0? It's saying it's not an impact, so does it need to be permitted?

Response : The Division recognizes some value to the regulated community in illustrating physical alteration activities that may require permitting but result in no functional loss, including activities that represent functional improvements.

48. **Comment** : Vegetative stabilization with in-stream structures is listed under Tier 1 impact. Some of this sounds like a mitigation treatment. The SQT affords additional credit to living vegetation and large woody debris, which here seem to be listed as impacts. Is there a way to refer to commonly used mitigation structures, versus those that would be considered an impact? It's confusing to have similar treatments described as both an impact and a mitigation treatment.

Response : The Tier 1 language referenced describes bank reshaping prior to stabilizing with vegetation and large woody debris in addition to installation of in-stream structures, including some hard-armoring methods. These activities may be part of a mitigation proposal and demonstrate lift, may result in minimal and/or temporary impacts, or may at some scale be considered a lower, but still appreciable loss of resource value that would require compensatory mitigation offset.

49. **Comment**: All three of the Tier 1 descriptions should be considered to have no associated degradation and no functional foot loss. It is recommended that the state consider the equation for Tier 0 and Tier 1 be PCS = 1.0 * ECS or 0% loss.

Response: The Division has clarified that impacts may result in no functional loss if an applicant can demonstrate functional lift resulting from the proposed activities. In addition, the project-specific scale and nature of activities will be taken into account in determining the need to offset any appreciable resource losses.

50. **Comment:** Tier levels: Tier 6 eliminates any incentive to do stream relocations. Stream relocations should not be the worst category.

Response: Thank you for your comment. We did not intend to convey all stream relocations were to be mitigated for in a manner similar to other impact types and have provided separate, specific guidance on on-site replacement (relocation) proposals. Many stream relocations are considered a fill and replace type impact. Permittees will have to determine existing conditions and demonstrate no net loss of resource values has occurred at the end of the monitoring period. For shorter projects, applicants will not be required to calculate debits using the Debit Tool, and then evaluate the replacement channel using the TN SQT quantitative assessment methodology. Applicants proposing to fill a stream channel and replace it with a new channel will be required to mimic and maintain the existing condition of the stream. Stream relocations greater than 500 linear feet will be required to demonstrate the stream has maintained classified use support demonstrated through the Tennessee Macroinvertebrate Index and maintain jurisdictional status as a stream. If maintaining existing conditions with the new channel are demonstrated, no additional mitigation is required.

51. **Comment:** TDOT recommends that the tiers be revised in order to provide clarity. There appears to be overlapping information between multiple tier categories which causes confusion.

Response: Thank you for your comment. The Division has revised the tier descriptions for added clarity based on this and other similar comments.

52. **Comment** : The descriptions for road crossings under Tiers 2, 3, and 4 are really quite similar. I recommend reducing the repetitive wording, and clarifying what differentiates the degree of impacts and effects between the Tiers for these road crossing impact types.

Response : Changes to the descriptive language under each Tier should better clarify the differences between bridge impacts.

53. **Comment:** We note that other Southern states are apparently running considerably more simplified programs successfully. Georgia, for example, uses only three (3) tiers to categorize stream conditions.

Response: The USACE Savannah District that operates in the state of Georgia, in conjunction with the USEPA has implemented an interim guidance document for credits and debits. The USACE and the USEPA have begun to collect data and develop a robust reference stream database and impact database in order to develop a more robust protocol, most similar to the TN Debit Tool and the TN SQT. The Division predicts the state of Georgia will update their guidance document within the next two years to align more closely with TDEC's protocol.

54. **Comment:** Tier 0, Tier 1, and Tier 2 impact categories seem to cover impacts that shouldn't require a permit, only require a general permit (GARAP), or describe mitigation activities.

Response: The Division has clarified that impacts may result in no functional loss if an applicant can demonstrate functional lift resulting from the proposed activities. Many activities that qualify for General Permit coverage at a certain scale require mitigation when conducted at a larger scale (e.g. road crossing encapsulations)

55. **Comment:** TDOT recommends replacing "no riprap is associated with these structures" to "no riprap is located within the stream bed, bank or buffer zone" in Tier 0 for span bridges.

Response: The Division agrees and will make this change.

56. **Comment:** For a Tier 3 impact, TDOT recommends the distance of bents, abutments or piers is reduced to be 10 feet outside the channel.

Response: The Division has determined that wide floodprone benches sized in relation to the channel width assist in energy dissipation, help maintain epifaunal substrate stability, allow for a more natural channel form. Wider floodprone benches help alleviate channel degradation and maintain healthier aquatic habitat.

57. **Comment:** Tier 3 Grade Control and Bank Armoring Example – this Tier includes grade control structures that "do not prevent aquatic passage." How is it determined what prevents passage? What kind of organisms? Many structures are barriers to some aquatic organisms and not others.

Response: The interpretation of the wording can depend on the size of the stream. In streams large enough to support a fish community, the Division generally will interpret this to mean 'does not significantly prevent the passage of fish and other mobile organisms in either direction up- and downstream from the grade control, nor prevent population dispersal, colonization, or recruitment'.

58. **Comment** : Grade Control structures that convert lotic features to lentic features have more than minor impacts to water quality, and more than moderate impacts to aquatic communities. These types of activities are more appropriately assigned to a higher tier than Tier 3. However, in-channel structures designed for the purpose of improving channel stability (cross vane, J-hook vane, log vane, etc.; possibly

requiring natural channel design or similar), that are constructed using natural materials, and that do not impede aquatic organism passage, might be combined with armoring bank treatments and still fit within this Tier.

Response : In reference to grade controls, the Division generally agrees with the commenter, but not in all cases. In low gradient west TN channels, for example, the grade control might be beneficial in preventing severe down-cutting and restoring aquatic passage with minimal impacts to water quality and aquatic communities. Other types of grade controls more appropriately belong under Tier 4. In-channel structures as described by the commenter are included under Tier 1.

59. **Comment**: For a Tier 3 impact, TDOT recommends excluding the wing walls from this tier category unless the wing wall has a concrete apron/concrete bottom.

Response: The Division will consider re-wording the description to state: "This includes wingwalls and all components attached to the culvert structure unless the wingwalls have no impact on and do not disturb the stream channel walls during or after installation." All wingwalls that have a concrete apron or bottom are not excluded.

60. Comment: For a Tier 3 impact, TDOT recommends that the term "extensive" be defined by an amount.

Response: Interpretation of this term is contextual, depending on the size of the channel and crossing structure. Extensive would generally mean significantly more than would be considered allowable in a GP without mitigation as part of a standard transition.

61. **Comment** : Within Tier 2 – Gravel bar mining : This activity usually does have a significant impact on aquatic communities and should be moved to Tier 4.

Response : Gravel Bar Mining impact in this Tier is intended to refer to harvesting from exposed bars and benches that are above the water line, and generally conform to the conditions (but not the scale limit) found within the ARAP general permit. The Division agrees that unregulated gravel bar or stream bedload dredging would reasonably be considered to cause more extensive resource loss and would fall within a higher Tier category, however this is not something the Division would ordinarily permit.

62. **Comment** : In Tier 4, Threshold Channel for Flood Control impact type, it might be appropriate to include a statement regarding the extreme rare conditions where this might even be considered.

Response : Since the Division cannot anticipate the possible future scenarios where such an activity would be considered, we prefer to not to specify in this document. Individual ARAPs include alternative analysis and other considerations for avoidance and minimization, and are considered case-by-case.

63. **Comment:** For a Tier 4 impact, TDOT recommends rewording "not to exceed the length of the culvert" to "not to exceed the width of the bridge". The only time banks will exist post construction is if the proposed structure is a span bridge. The sidewalls of the 3-sided box and arch replace the stream banks.

Response: The Division agrees and will change the wording to "...*not to exceed the width of the bridge*."

64. **Comment:** For a Tier 4 impact, TDOT recommends including embedded culverts/pipes/ boxes, which allow for natural substrate to back fill inside the structure, to the Tier 4 classification vs Tier 5 with all pipes and boxes.

Response: Thank you for your comment. While the Division agrees culverts and boxes that allow

for a layer of natural substrate to fill in are an improvement over non-natural bottoms, any closed-bottom structure cuts off hyporheic flow and exchange, reducing biological habitat, ecological function, groundwater contributions, and other chemical and biological processes important to healthy streams.

4.3.1 Submittal Guidelines for Stream Fill and Replacements

65. **Comment** : The guidelines would appear to always require PRM of relocated channels. The agencies should allow the permittee flexibility in choosing whether or not they would like to perform onsite PRM or alternately, if the permittee will just provide alternate compensatory mitigation via ILF or bank. In many situations, onsite replacement PRM is not practicable, thus two options should be given to the permittee, to allow for flexibility of options.

Response : The Division agrees. In situations where it is not possible or practical to have an on-site replacement channel of sufficient function and value to be considered as on-site PRM, then the applicant may propose an alternate mitigation approach, including credit purchase where appropriate.

Comment : The guidance states that for stream relocations all jurisdictional streams will be required to "maintain or improve hydrology" – can you please clarify what this means ?

Response : The Division has experienced relocation projects in the past where the flow regime and perennial or intermittent hydrology of the original channel were not maintained in the new channel section. The language is intended to make clear that DWR cannot accept wet weather conveyances, no matter how well designed and constructed, as mitigation for perennial or intermittent streams.

66. **Comment:** For the purpose of clarification, TDOT recommends rewording as follows: "....must achieve maintain that status at the end of the monitoring period...."

Response: The Division agrees and will make the change.

67. **Comment** : Recommend removing the sentence that states that proposed condition may never be less than existing condition for relocations between 200 and 500 feet. As written, this allows no flexibility. For example, it may be that the relocated channel has a natural channel design, and is designed as best as possible, however may have slightly less function at end of monitoring (i.e. trees are smaller than original stream). In this situation, you shouldn't just award zero credits, The permittee should make up the balance via the purchase of a few ILF credits to make up this deficit.

Response : The language referenced refers to *proposed* conditions, not actual as-built results, which may or may not meet the proposed conditions. The language will be revised to read "Stream relocation projects will not be approved where the proposed condition will be lower than the existing condition at the end of the monitoring period unless additional compensatory mitigation is provided."

68. **Comment:** TDOT recommends rewording this to take into consideration that fish and aquatic life use designation can be impacted by things off site and out of the applicant's control. If this were to occur and an adequate justification with documentation were provided the applicant should not be penalized.

Response: The Division agrees that outside factors beyond the applicant's control might affect classified usages. A sentence to this effect will be added to this section.

69. **Comment:** Nowhere in the guidance does it mention that riprap cannot lengthen stream channels (unlike a pipe, riprap can still lengthen the channel as it is able to mimic stream geomorphology). It is assumed that the proposed length restriction would apply to relocated riprap lined channels since this is still

considered an impact and that the debit calculator will highlight the cell if the existing stream length is shorter than the proposed stream length.

Please confirm whether proposed riprap channel relocations cannot have a greater length than the impacted channel and generate credit.

Response: Language in the Guidelines have been updated to make it more clear that proposed riprap channel relocations, which do not meet the minimum requirements in Rule for relocated channels, will be considered a Tier 6 impact, and therefore the proposed length will not be a factor in the proposed condition score or resulting debits.

70. **Comment** : The guidance states that some fill and replacement projects will require the systems to be placed in riprap lined channels. I recommend explaining under what circumstances rip-rap lined channels might be necessary (velocities resulting in excessive shear stress, certain highly erodible soil characteristics, etc.)

Response : The Division has refrained from specifics because we cannot foresee what scenarios might arise. The types of scenarios the commenter describes might very well be factors supplied in an alternative analysis justifying the use of riprap lined channels, but would have to be evaluated on a case-by-case basis.

71. **Comment** : The USACE does not support mitigation crediting for riprap lined ditches; thus the USACE recommends removing the section describing this scenario. Complete fill of a natural channel is a tier 6 activity according to USACE, the construction of a new riprap ditch nearby does not qualify for PRM, as the minimum standards of PRM are not met. If riprap placed in an existing channel is considered a Tier 3 activity, then construction of a riprap channel for relocation should not qualify for any mitigation credit.

Response : We agree with this comment, and have included language making it clear that replacement channels that cannot meet the minimum requirements in Rule for relocated channels (such as a fully riprap lined channel) would be considered a Tier 6 impact for the length of the existing filled stream.

72. **Comment:** The Division should enforce the 12-part plan for any stream relocation/restoration activities that are providing compensatory mitigation (or reducing the requirement for compensation). If permittees want mitigation credit for a stream they must meet the all mitigation requirements regardless of length. Please clarify this requirement in the guidelines.

Response: Thank you for your comment. The Division intends to require the full 12-part plan only for stream relocations greater than 500 linear feet, but additional requirements for shorter relocations may be required by the Corps of Engineers.

73. **Comment**: Are discrete relocated channel segments intended to be factored cumulatively, in terms of replacement channel requirements (e.g. use of SQT, monitoring requirements, etc)? As an example, if a transition is at the inlet or outlet of the culvert, would you add these together or consider these separate relocations?

Response : The guidance is generally intended to apply discreetly to each relocation in a project, however there may be situations where the Division would view these cumulatively such as very close relocated segments in the same reach of stream channel.

74. **Comment**: Stream relocations can be a significant improvement over existing conditions and the TN SQT tools should be revised such that a relocated channel can offset its own relocation.

Response: Thank you for your comment. The above suggestion was the intent of the wording in the guidelines, and in fact a relocated channel *must* offset the original filled channel or additional mitigation offset will be required. The Division will work to clarify the language in the document.

4.3 Temporal Loss

75. **Comment:** TDOT recommends that the term "completed" be defined as the completion of the physical construction of the mitigation site or stream channel but excluding the monitoring period.

Response: The Division agrees that this was the intent of the language, and will interpret 'completed' in the manner suggested by the commenter.

76. **Comment** : While I understand the need for flexibility in assessing temporal loss, it would be beneficial for permittees to understand what kind of multiplier would be applied, and when it would be used.

Response : See response to comment #77 below. Any multiplier utilized to mitigate for temporal loss would be based upon the length of time between the authorized stream impact and the actual replacement of the resource value lost. The multiplier would be used to increase the amount of credits needed for mitigation due to the temporal loss. The Division intends to remain as consistent as it can with temporal multipliers adopted by the IRT, or USACE Districts in TN, where appropriate.

77. **Comment:** TDOT requests that the scientific data used to develop the multiplier be included in or referenced into the Mitigation Guidelines.

Response: No specific multiplier has been calculated. The proposed language says only that the Division "...*may use a multiplier to account for temporal loss of resource value*". In the event that the Division would choose to apply such a multiplier, that value would be assigned on a case-by-case basis and decided by the IRT. Applicants retain the right to appeal such decisions.

4.4 Proximity of Compensatory Mitigation

78. Comment: Proximity Factor. Under section 4.4 (Page 30) of the Draft Guidelines, proximity factors with multipliers are indicated as an option for compensatory mitigation. It is highly appreciated that TDEC has taken this into consideration as this may encourage use of banks to offset stream impacts. There is no clarification though as to whether the multiplier ... will only apply to HUC's located in the same major river basin, or if the HUC distances can be applied across major river basins (i.e. Cumberland River Basin to Tennessee River Basin). It is also unclear if the method for counting HUC 8s begins at the farthest extent of a bank's service area towards the impacted HUC 8, or from the HUC 8 in which the bank is located itself.

Response: The proposed language does not distinguish between HUC 8 watersheds in terms of major river basins. For banks, the HUC 8 proximity will be counted from the HUC in which the mitigation project is located.

79. **Comment**: TDOT recommends that "must occur in Tennessee" be removed. It is a direct conflict with the 2008 Federal Mitigation Rule. TDOT recommends following the available federal guidance instead of prioritizing mitigation proximity.

Response: The requirement for mitigation to occur in-state is provided in rule; this proposed language is needed in order for the guidelines to maintain compliance with the rule. As a state agency, our staff

have no authority to conduct investigations or enforcement outside of Tennessee, and impacts to the state's waters should logically and ethically be mitigated for within the state's boundaries.

80. **Comment:** With the proposed distribution of the USACE draft proximity calculator, we encourage TDEC and USACE to maintain consistency with the formulas to avoid confusion on both the mitigation and impact side. In addition, we strongly encourage TDEC and USACE to consider engaging active and pending bank sponsors to have additional discussions on how the proximity tool should be applied.

Response: The multipliers are intended to incentivize mitigation as close as possible to the original impact site, and within the same watershed unit wherever possible. The language is intentionally worded, "Where appropriate the Division may use a multiplier...", which provides the flexibility to evaluate the relative merits to resource value between potential mitigation locations. The Guidelines' language of "This multiplier will be based either on an IRT-approved formula, or as follows :" also provides flexibility to use an adopted USACE proximity calculator as approved by the IRT. Consistency is one of the intended goals of the proposed language, and the Division intends to work closely with mitigation providers on both individual cases and in periodic review of the guidelines

81. **Comment** : It might help to clarify distance from the impact. Does "one HUC-8 away" mean a contiguous HUC? Contiguous to those? Any consideration for different watershed, but within an ecoregion (if that is even geographically possible)?

Response : The term "one HUC-8 away" means an adjacent, contiguous HUC-8. The language will be added to read "one HUC-8 away (adjacent)".

82. **Comment:** TDOT does not believe double the mitigation penalty is warranted for use of in lieu fee programs; this should be removed.

Response: There is no automatic penalty or multiplier for use of an ILF program. A proximity factor may be assessed for impacts occurring outside of an IRT-approved ILF service area, and a temporal loss multiplier may be assessed for ILF programs or service areas that have a significant time lag in putting offsetting mitigation on the ground for previously incurred debits from impacts.

83. **Comment:** The new ILF multipliers would nearly double TDOT's annual ILF costs even assuming the best case scenario of a 45% reduction in debits and an average multiplier of 1.5. Annually, this could result in an increase in mitigation costs from \$5.5 to \$19 million dollars over existing expenditures.

Response : It is unclear what assumptions or data the comment is based on, but it should be noted that a proximity multiplier for ILF credits would only applicable for impacts occurring outside of an IRT-approved ILF service area.

84. **Comment**: TDOT suggests removing the multipliers so as not to discourage permit applicants from using the banks and ILFs that bring greater benefit to the watershed. This change would also more closely align the state and federal mitigation rules.

Response: The multipliers are intended to incentivize mitigation as close as possible to the original impact site, and within the same watershed unit wherever possible. The language is intentionally worded, "Where appropriate the Division may use a multiplier...", which provides the flexibility to evaluate the relative merits to resource value between potential mitigation locations.

85. **Comment**: It is unclear how a proximity factor will work for In-Lieu Fee Service Areas that encompass multiple HUC-8 watersheds. You state that "because the location of the future offsetting mitigation project is unknown, the proximity calculation will be based on the most distant HUC-8". Can you provide an example of how this will work?

Response: The intent of the language proposed is that since ILF credits do not specify the location of the offsetting mitigation work, the proximity calculation will be made using the most distant HUC-8 within the ILF service area from the original impact site.

86. **Comment** : "For In-Lieu Fee Service Areas that encompass multiple HUC-8 watersheds, because the location of the future offsetting mitigation project is unknown, the proximity calculation will be based on the most distant HUC-8." Is there a way to make locations of mitigation projects within a service area a part of ILF project tracking? There seems like a potential for requiring more mitigation than is necessary.

Response : If an applicant is approved to use an ILF outside of its approved service area to provide compensatory mitigation, the Division at the time that a permit is reviewed and issued does not know where in the service area the eventual mitigation will take place. Since ILFs generally do not carry a "surplus" of completed mitigation projects, the existing projects with known locations have already been used to provide offset for previous impacts. In addition, while the locations of ILF mitigation projects are tracked, specific permitted impacts are not assigned or tracked in any way to specific mitigation projects within a service area, ILF accounting simply entails overall debits and credits.

87. **Comment:** Under the compensatory requirement section there is a requirement that mitigation be in the same HUC. That requirement is a problem in an urban environment. I would think that some leeway needs to be made where limited property is available to mitigate due to prior urbanization, so in urban areas this HUC requirement may need to be reevaluated.

Response: The 8-digit HUCs are large watersheds (example: Loosahatchie) covering extensive areas of both urban and rural landuse, and in most cases will provide broad choices and flexibility to the applicant. The Division is expressing a preference for and intention to prioritize keeping mitigation within the same watershed/HUC whenever possible, but acknowledges this may not always be possible and is not a rigid "requirement".

4.5 Common Encountered Scenarios /Frequently Asked Questions

88. **Comment**: TDOT recommends that the current 50 feet allowance for transition without conditions remain the standard.

Response: The Division agrees - this was the intent of the language. As previously, transitional realignments of up to 50 feet (25 feet upstream and 25 feet downstream of structures) are allowed without mitigation. The language also provides for lengths exceeding this without mitigation if monitoring demonstrates that the existing condition of the channel has been maintained.

89. **Comment:** Section 4.2.1 states that the Division requires a standard 12-point mitigation plan (33 CFR 332) that includes documenting the stream's existing condition, proposed condition, and monitoring requirements commensurate with the impact length. The Guidance then states that replacements less than 200 linear feet will require monitoring for a minimum of three years. The Guidance also states that there are few scenarios within structural transition zones (which are 25 ft. or less) where the Division does not require monitoring or performance standards. Both of these scenarios are covered under the General ARAP, which does not require mitigation, and therefore should not require a 12-point mitigation plan with monitoring requirements and performance standards.

Response: The commenter is correct that mitigation plans are not required for activities that are covered under a General Permit. See 1st paragraph, 3rd sentence under Section 4.2..."Activities covered under a general ARAP would not be required to determine resource value (or functional)

loss as detailed in this document.". It should also be noted that there are currently no General ARAP Permits that authorize stream relocation projects.

90. **Comment:** Section 4.3 states the Division may use a multiplier to account for temporal loss of resource values. It is recommended the multiplier or equation is provided in the Guidance for consistency, and not left to the discretion of the application reviewer.

Response: As the commenter notes, the language reads that the Division <u>may</u> use a multiplier in cases where the mitigation is proposed to be completed more than 1 year post-impact. This is intended in part to incentivize banking over lagging ILF programs, and would not apply to purchase of established mitigation bank credits. The multiplier used, if any, would depend on the length of the temporal loss.

91. **Comment:** TDOT does not agree that non-CPD contiguous structures should be cumulated with project impacts which would result in the need for mitigation.

Response: The Division must disagree on the grounds that without cumulating the Division could not meet the spirit and intent of No Net Loss. However, the language specifies that the mitigation required will only apply to the new, currently authorized impacts. The applicant is not required to provide mitigation for the older non-CPD impacts.

Section 5 Providing Resource Values and Functional Lift

92. **Comment:** TDOT strongly recommends that the Division adopt the federal hierarchy for compensatory mitigation.

Response: While one mover behind these guideline revisions is to bring the Division into closer alignment with the federal requirements for the benefit of the regulated community, we recognize that this is one area where we differ slightly. The Division's ARAP Rules place priority for mitigation based on methods (e.g. restoration over preservation), and on proximity, not on the type of provider. However, the Division will also take into account ecological preference and risk, for which third-party providers are often the preferable choice.

93. **Comment** : My understanding is that the Division does not ascribe to the federal hierarchy for compensatory mitigation projects. Therefore, depending on the site, is it true the Division may prefer permittee-responsible mitigation?

Response : The commenter is correct. See Section 5 of the proposed language, which states both that the Division does not ascribe to the federal hierarchy for compensatory mitigation and that DWR may in some cases prefer permittee responsible mitigation.

94. **Comment:** TDOT recommends requiring proof of credit purchase to TDEC within 60 days of start of construction.

Response: The Division's experience is that is it much more difficult to ensure permit compliance with credit purchases without a fixed submittal date in the permit. The Division has no way of knowing, tracking, or following up on a "start of construction" compliance date for this extremely vital permit requirement, and has had a history of permittees not following through with purchase or documentation of credit purchases when given an open-ended compliance date.

5.1.2 Credits

95. **Comment:** TDOT recommends adding additional guidance that discusses what can be done with extra credits generated, and whether those extra credits be "banked" for future upcoming projects.

Response: We assume this comment is related to a permittee-responsible mitigation project associated with a specific permitted impact. There are clear federal guidelines for how mitigation banking works, and the Division is not in favor of PRM projects skirting those requirements and unfairly competing with third-party providers. If other nearby, specific TDOT impact projects propose to utilize 'extra' credits from a PRM, those proposals will be evaluated by the Division on a case-by-case basis.

5.2 Descriptions of Common Mitigation Practices

96. **Comment**: TDOT recommends that additional credits be granted if the resource value and functional lift from the mitigation activities are higher than those submitted with the proposal.

Response: Section 5.1 states the Division will reward credit based on the amount of resource value and functional life achieved, not on what was proposed. This includes the possibility that lift achieved may exceed that proposed in the mitigation plan, and therefore additional credits may be granted.

5.2 Descriptions of Common Mitigation Practices

97. **Comment**: We applaud the thoughtful criteria that TDEC developed to inform when to approve the use of preservation as mitigation.

Response : The Division appreciates the supportive comment.

98. **Comment** : Preservation criteria 7: "The resources are under threat of destruction or adverse modifications; and that threat is not under the control of the applicant." Can you provide an example of a situation where the applicant can put a preservation easement on property, but is not in control of the threat to that property?

Response : The Division agrees that the language is unclear. Wording will be revised to read "The resources are under threat of destruction or adverse modifications from activities other than the proposed actions of the applicant or landowner." Examples might include property where the mineral or logging rights are severed from the deed.

99. **Comment**: Section 5.2, Urban Projects, grants a 15% increase in credits for projects within an MS4 for establishing education and outreach. TDEC is applauded for this incentive to perform urban projects; however, even with this incentive, urban projects are still going to generate very few credits in relation to the amount of effort and money spent to improve water quality in the highly developed areas. Furthermore, the required 50 ft. buffer will be very difficult to achieve for urban projects.

Response: The Division recognizes that urban streams have multiple obstacles working against their selection as mitigation sites. Part of the intent in moving to a functional resource value system rather than linear feet/ratios is to make urban restoration more attractive and practicable. Because urban streams often have very low existing condition scores, it can be easier to demonstrate functional lift in those streams, even though there may be site constraints.

100. **Comment** : A sign is worth more than preservation? If you combine educational components and preservation, can you get up 25% of mitigation credits from methods that technically don't result in any functional lift?

Response : No. Preservation must occur in concert with a larger restoration or enhancement project (see preservation criteria #3). The 15% increase for urban projects can be only applied as an additional increase to mitigation credits by including education and outreach components as part of a physical mitigation project.

101. **Comment:** TDOT requests that this be reworded: "Urban stream restoration projects may receive an additional 15% increase in overall generated credits for required mitigation from TDEC."

Response: The Division sees this wording as an improvement and will make the change as suggested, but will end the sentence instead with "…credits for mitigation required by TDEC only."

5.3.1 Stream Mitigation Site Considerations

102. **Comment** : Would credit be given for mitigation if there were chemical conditions that would preclude biological success (e.g., mine reclamation at a trashed site with a pH of 3 – physical improvements don't get you much if you're a fish or bug and the pH is still 3) ? Can you give credit for physical-only fixes if it really doesn't improve ecology?

Response : The type of situation the commenter describes would be considered a serious site constraint, and may limit the eligibility for approval of the site. There may be other situations where there are water quality factors beyond the control of the applicant that may limit biological improvement, but any functional lift to geomorphology or hydrology will be credited regardless of biological lift (see example under Section 8.2.2), especially where the water quality problems might be temporary. However, lack of biological lift does limit the amount of credits possible on a site. The SQT also provides for credits for improving chemical conditions where possible.

103. **Comment** : Implementing all five Functional Categories of the SQT to document site suitability, with biological and habitat assessments on multiple reaches requires a significant investment of time and resources that may be cost-prohibitive for applicants, particularly on intermittent streams. This requirement might delay projects a year to wait to sample streams with only seasonal hydrology.

Response : The single greatest obstacle to permit review/issuance in our state is the lack of mitigation credits available for purchase. By creating a consistent and defensible data-driven method for assessing debits and credits, the Division hopes to greatly increase the number of mitigation credits available. The initial collection of site data may take a little more time, but should be more than offset by the ability of applicants to provide mitigation through the purchase of already existing mitigation credits. Also, applicants have the option of using provided default values for existing conditions, and can decide for themselves whether the time and cost of full biological assessment is to their advantage on a given project.

104. **Comment:** TDOT recommends documenting and including in this manual the process for determining the eligibility of a mitigation project.

Response: The SMG does contain some discussion of appropriate site selection and factoring in site constraints, and additional minimum requirements for a mitigation project are also outlined in the ARAP and Federal Mitigation Rules. The *TN SQT and Debit Tool User Manual* is an additional guidance resource describing important considerations in selecting a site. Ultimately the eligibility for the use of a proposed mitigation project will be determined by the regulatory agencies based on the information provided by the applicant and practitioner.

Section 6 Performance Standards and Monitoring Requirements

105. **Comment:** In the Monitoring Report Requirements it states that the monitoring report should be submitted within 6 months of the channel improvements. This appears to be in conflict with the 60 day requirement referenced in this section.

Response: The commenter is correct that '60 days' is used in section 6 for submission of as-built surveys and '6 months' is used for the same in section 7. The language will be corrected to read "6 months' in both places.

106. **Comment:** If there have been no significant changes to the mitigation design, then the construction plans should be sufficient to represent the as-built plans. If design changes have occurred, red-lined construction plans are adequate to represent the as-built plans. This method is currently used to satisfy the as built request from USACE.

Response: The Division agrees that no as-built plan is needed if there were no significant changes from approved plans, and that a red-line construction plan may in some cases be sufficient to satisfy this condition.

107. **Comment:** TDOT suggests specifying a matrix/ratio for determining how much extra credit can be generated by increased buffer widths. TDOT further suggests replacing 100 ft. with 50 ft., as 50 ft. is the minimum requirement.

We strongly encourage TDEC to include a quantitative method to adjust stream credit based on average and minimum buffer widths for mitigation projects.

We are concerned that the 50' buffer requirement may not follow what is indicated in the 2008 Compensatory Mitigation for Losses of Aquatic Resources; Final Rule which states "If buffers are required by the district engineer as part of the compensatory mitigation project, compensatory mitigation credit will be provided for those buffers." Currently, no credits are being provided for the first 50' of stream buffer since it is treated as a "minimum" buffer requirement to generate functional lift.

Response: Performance standards for minimum buffer widths are set at 50 feet. Projects that propose variations of those widths based on site constraints may be reviewed and approved on a case-by-case basis. Credit generated for buffer widths are adjusted and credits awarded when using the TN SQT based on the actual width of the zone. It should be noted that the first 50 feet of buffer does receive significant credit when using the TN SQT, raising the metric score from zero (no buffer) to 0.7 (50-foot buffer). No additional credit is proposed beyond this approach.

108. **Comment:** As stated on page 37 in the proposed 2018 Stream Mitigation Guidelines, "many projects will not reach a functioning state at the end of the monitoring period" in reference to vegetation. However, on page 45 the guidelines state, "At the end of the project monitoring period, the above parameters (including vegetation) should be fully functioning." These two statements are contradictory. If vegetation doesn't reach fully functioning levels by the end of the monitoring period will the practitioner be penalized? Will credits be held? Will vegetation be analyzed according to performance standards when fully functioning condition is not achieved?

Response: The sentence has been deleted. Compensatory mitigation projects are required to demonstrate functioning parameters for floodplain connectivity, lateral migration, bedform diversity and riparian vegetation. If a project is unable to achieve this level of success during the monitoring period the permittee may choose to monitor for an extended period of time. If additional monitoring years are not warranted, the requirement may be lowered on a case-by-case basis.

109. **Comment:** Achievement of 5% areal coverage of invasive species seems nearly impossible, especially in areas where there is an extremely vigorous existing presence of certain invasive species. Moreover, "no contiguous areas greater than 200 square feet should be vegetated with more than 50% relative areal coverage of invasive species at the end of the monitoring period" seems excessively stringent.

Response: These standards were established by aquatic resource professionals as members of the Interagency Review Team for compensatory mitigation. The proposed language reads"...less than 5% areal coverage [of invasive plants species] *throughout the monitoring period*." The Division recognizes

TDEC Response to Public Comments on Stream Mitigation Guidelines that longer term invasive control is not practical.

110. **Comment:** In regards to biology, the proposed guidelines state that "stream segments that currently exhibit a level of biologic integrity well above the minimum use support level in most cases will not be approved as a compensatory mitigation site." What is considered "well above"? 10 above? 5 above? Case by case? It seems rather subjective. This should be made clear.

Response: The Division recognizes that TMI scores of 30-32 are 'on the bubble' and may fluctuate back and forth from sample to sample. Sites that score 34 and above, particularly those with a stable history of strong Fully Supporting scores may not be good candidates for projects proposing significant in-channel or bank disturbances, but less invasive or risky activities associated with Fully Supporting streams may be considered for credits on a case-by-case basis. In all cases any stream reach supporting its designated uses prior to a mitigation project must maintain or improve its support post-project.

111. **Comment:** It mentions that the "riparian zone must be revegetated, preferably with species native to the specific region of Tennessee." Are there instances when non-native species would be allowed? Why is this qualified with "preferably"?

Response: The Division recognizes that some projects (in urban areas or public parks, for example) may have riparian areas more suitable for grass and other landscaping that is not all native, but still represents a definite improvement over the existing condition. As stated, native vegetation is always the first preference.

Section 7 Monitoring Requirements

7.1 Typical Monitoring Periods

112. **Comment** : Rather than require seven years if there is a federal permit involved, shouldn't it just say that TDEC will increase the monitoring period if required by federal permit? As we have seen recently, federal regulations can, and will, change.

Response : The language will be amended to read "...seven years post-construction, or other such time period as specified in federal rules."

113. **Comment:** TDOT recommends reducing the monitoring period for federal stream compensatory mitigation projects to that amount required by the USACE. TDOT further recommends reducing the reporting period timeframe; this would allow a project to be constructed and complete the monitoring period before an ARAP (issued for five years) would expire.

Response: The proposed language indicates monitoring periods of 3-7 years "after completion of the project", depending on the situation. Larger scale projects are proposed for monitoring periods of 5-7 years following completion, so it is unlikely any larger scale projects would be able to conclude monitoring within the 5 year permit term. For some projects the time needed to document project success and long-term stability following completion of the improvements will exceed 5 years.

7.2 Monitoring Report Requirements

114. **Comment:** TDOT recommends that TDEC sets October 31st as the due date for all monitoring reports. Hydrologic determinations will still be made between February 1st and April 15th, as required, but it is more efficient to submit all reports at once.

Response: The Division prefers to keep the language as written, which breaks up the submission of reports throughout the year. If all permittees submitted all monitoring reports on the same annual date it would be an undue burden on DWR staff to review and provide feedback in a timely manner.

Section 8 Tools for Applicants

Section 8 is a new section that covers the TN Debit Tool and the TN Stream Quantification Tool.

115. **Comment:** TDOT is requesting that the Mitigation Guidelines state that no specific qualifications are required to use the Debit Tool.

Response: The Guidelines will not contain any specific statements about required qualifications.

116. **Comment** : We suggest adding an area to import photos into the Debit Tool, similar to what is available in the TN SQT workbook.

Response : Thank you for the suggestion. We have added a photo tab in the excel workbook.

117. **Comment** : We suggest instead of having 10 preloaded existing condition reaches, which may be overwhelming for some users, just having one and the option to add additional reaches with a simple addition button.

Response : We disagree. Permittees are under no obligation to scroll through all tables in the Existing Condition tab. Adding tables when needed, may lead to errors in excel functions and broken equations.

118. **Comment:** While we are in support of the functional assessments for mitigation projects, we believe that recommending applicants perform these assessments for the TN debit tool encourages them to underestimate the existing stream condition for their benefit. Furthermore, providing the option to collect data will likely delay the application review process and issuance of permits, particularly for projects that propose impacts to numerous features (i.e. transportation projects).

Response: The Division has a different perspective. Under present guidelines only linear feet of channel were measured, with no regard for the quality of the resource that was being impacted or any measurable quality of the mitigation offered in its place. By standardizing how existing conditions and associated mitigation are measured and scored, it should become easier to check and defend the veracity of data submitted to the Division than before. The IRT conducts site reviews on all proposed mitigation sites, and the regulatory agencies review all applications utilizing the assessment options provided for in the Debit Tool.. Also, any tendency to underestimate the existing condition that gets past our review would be more than offset by the incentive to produce as much functional lift as possible at the mitigation site; no such incentive exists under the current guidelines.

119. **Comment:** We are in support of TDEC simplifying the impact side of the debit tool and generating a qualitative assessment or checklist that will still satisfy the TN debit calculator versus providing applicants with the option of performing quantitative assessments.

Response: The proposed guidelines allow for quicker, easier ways to establish an existing condition by providing for the use of 'standard existing condition' scores in place of field measurements (see Section 8.1.1). The Division's Rule state that the Existing Conditions must be measured by a quantitative assessment tool or other defensible scientific method as approved or determined by the Division. As of this time the Division is unaware of a qualitative assessment method or checklist that satisfies this requirement. In addition, the Division recognizes that some existing condition metrics are so obvious they can be demonstrated with photographs (the entire channel reach is already in a concrete channel, so the Percent Armoring metric is easily established for example).

120. **Comment:** TDOT recommends the addition of a lower limit for ETWs. Direction is also needed for addressing conflict resolution when a TDEC stream assessment states that the stream has unavailable parameters and is an ETW. The proposed method is based on the quality of the stream, and there is no standard lower limit for unavailable parameters; therefore, no upper limit should be given for ETWs.

Response: The applicant may choose to establish the existing condition of an ETW stream reach through evaluation of existing or collected data. In the case of a stream known to have unavailable conditions for additional habitat alteration, in most cases biologic data exists that could establish a lower existing condition score for that parameter. In the absence of other data the Division will use a default metric score of 1.0 for all ETWs

121. **Comment:** TDOT recommends that the standard existing condition (0.80) for streams should be regionalized across the state. The standard existing stream conditions vary across Tennessee. The standard existing condition for streams in west Tennessee should be lower than streams in other parts of the state.

Response: The standard conditional score of 0.8 is already regionalized across the state due to the fact that the individual metrics are based on regional reference data where applicable, then normalized to a 0 -1 scale (with 0.8 considered fully functioning for that particular metric in that particular regional setting). For example, the level of biological use support in a west TN stream is based on comparisons to the best streams in west TN ecological subregions, and not by comparison to east TN streams or an 'idealized' pristine condition. The applicants have the option of scoring the streams to demonstrate an actual existing condition rather than utilizing the standard value. In the absence of other data, the Division must assume the resource is Fully Functioning.

122. **Comment** : I recall that TDEC was going to conduct a study to determine if 0.8 was a suitable number. In order to be defensible, the ECS should be based on real data and studies of streams, and not just a seemingly arbitrary number.

Response : The ECS and the various metrics and measurement methods upon which it is derived are based on real data and studies of streams, many of which are regionalized specifically from reference data from Tennessee and its various ecoregions. All of these metrics are scaled from 0 -1, with 0,8 being considered a Fully Functioning score. The establishment of 0.8 as a standard existing condition for a stream reach represents the conservative default assuming the stream is healthy in the absence of data demonstrating a different existing condition for one or more metrics.

123. **Comment** : In terms of a standard condition score, have intermittent stream been evaluated separately from perennial streams to see if 0.8 is a statistically valid representation of function ?

Response : Our water quality criteria for biological use support include TMI scoring metrics for headwater streams, which include data from reference intermittent streams, and are derived separately from our larger perennial stream biocriteria. In addition, our geomorphologic reference sites include a range of flow types and drainage areas that range from 0.1 to greater than 100 square miles.

124. **Comment** : The guidance document describes standard condition scores for baseline TDECjurisdictional "streams" (0.8), and Exceptional TN Waters (1.0), but not for ephemeral streams that the Corps of Engineers has jurisdiction over and may require mitigation for impacts. Please include guidance for these as well.

Response : The Division does not require permitting or mitigation for wet weather conveyances. Almost all ephemeral channel reaches as defined by the federal agencies would be considered wet weather conveyance by DWR, and therefore no existing condition scores are included in the Stream Mitigation Guidelines. For information on standard existing condition scores for ephemeral channels, applicants are encouraged to contact the Corps of Engineers.

125. **Comment**: We agree with the use of a standard existing condition score of 1.0 for ETWs or ORNWs and 0.8 for a functioning stream. However we would like to see the addition of a lower standard condition score for a functionally impaired or degraded stream.

Response : In the absence of direct data establishing the actual current existing condition of a channel reach, the Division must conservatively assume that the channel is currently fully functioning. Applicants may choose to establish some or all of the actual existing condition metrics at their own discretion.

126. **Comment**: The mitigation tool is structured in such a way that if biological and chemical parameters are not measured, the applicant could never have an existing condition score as low as 0.4.

Response: While it may be more difficult to demonstrate the existing condition score is as low as 0.4 without supplying data for the biology and chemical parameters, it is possible in a highly degraded stream, and the same argument could be made for not measuring parameters in any of the other categories. The applicant has the flexibility to decide which parameters they deem worthwhile to measure. It is anticipated that in many cases TDEC's own biological or chemical data will be used. There may also be certain obvious situations where collection of benthic data would not be necessary to make that determination (stream is already in a CMP, or concrete lined, for example).

127. **Comment**: There appears to be issues when evaluating vegetation performance standards (i.e. average DBH) during each monitoring period as the SQT may identify some metrics to be "not functioning" and falsely indicate performance standards are not being met. Please provide clarification on this issue.

Response: Evaluation of SQT parameters (including vegetation) and additional performance standards during the monitoring period is an important indicator of the likely ultimate success of the project and allows for corrective actions to take place early in the project life where appropriate. The IRT and regulatory agencies are fully aware that not all metrics will achieve functioning status immediately, but should be trending in that direction during monitoring.

128. **Comment:** TDOT recommends biological and chemical parameters be removed from the tool, or carry significantly less weight.

Response: The Division feels that biological use support is integral to the concept of functional lift and loss, and the chemical parameters may be a useful category for demonstrating lift on some projects. The SMG is guidance, not rule, and can be edited as needed as experience is gained. It may well prove in the near future that one or both of these categories should be weighted differently.

129. **Comment**: TDOT supports the USACE Savannah District's impact site assessment, which is also supported by EPA Region 4.

Response: One of the driving factors behind this change to functional feet and calculating functional lift comes from our interactions with the USACE Nashville and Memphis Districts, who indicate that they are going in this direction. EPA is also represented on the IRT and has been fully supportive of SQT development. The USACE Savannah District that operates in the state of Georgia, in conjunction with the USEPA has implemented an interim guidance document for credits and debits. The USACE and the USEPA have begun to collect data and develop a robust reference stream database and impact database

in order to develop a more robust protocol, most similar to the TN Debit Tool and the TN SQT. The Division predicts the state of Georgia will update their guidance document within the next two years to align more closely with TDEC's protocol.

130. Comment : The EPA supports the State of Tennessee's Department of Environment and Conservation (TDEC) efforts to develop a stream assessment tool, debit tool, and update stream mitigation guidelines that are consistent with the requirements established in the Compensatory Mitigation for Losses of Aquatic Resources; Final Rule published on April 10, 2008 (2008 Rule). The EPA provided support for the development of the Tennessee Stream Quantification Tool (TSQT) through a Wetland Program Development Grant (WPDG) and supports the tool as an important effort for mitigation in Tennessee to better meet the mitigation requirements in the 2008 Rule. Similar tools are completed or under development in other states in Region 4 of the EPA and throughout the country.

Response : The Division appreciates the supportive comment.

131. **Comment:** TDOT recommends providing clarification on when the existing score can be less than 0.4. If the minimum existing standard of 0.4 only applies to streams being impacted vs. streams being improved for mitigation, TDOT recommends to providing clarification in the guidance manual.

Response: The commenter is correct that the minimum existing condition score of 0.4 only applies to calculating impacts (debits owed). It does not apply to streams being considered as mitigation opportunities. We will revise the language to make this clear.

132. **Comment** : Have you evaluated previous projects for estimated debits and credits using the SQT, and how it changed the required credits, and the credits generated from the mitigation project? Can you share those evaluations, and provide additional time for review and comments based upon these evaluations?

Response : The Division evaluated nearly 200,000 linear feet of proposed compensatory mitigation projects with the TN SQT data as provided by practitioners in Tennessee. Similarly the Division has evaluated more than 20 large scale impact projects with multiple impact reaches per project to determine debit implications. These evaluations helped refine and confirm the TN SQT and Debit Tool's validity and consistency. The Division does not feel it is appropriate to share data from compensatory mitigation proposals that were provided on a condition of anonymity.

133. **Comment**: TDOT is anticipating a reduction of 40-80% in the number of credits produced using this methodology versus 2004 mitigation guidelines. On impacts sites TDOT anticipates a 20-45% reduction in debits, but this does not include additional mitigation penalties for using the environmentally preferable methods (banks and ILF), which could represent an additional 200% increase in credits owed. It has been mentioned on numerous occasions that this would reduce the amount of mitigation owed by TDOT; however, we are not finding that to be case from our evaluation of previously permitted TDOT projects.

Response: The Guidelines do not mandate any additional penalties for using banks or ILFs (which may or may not be the environmentally preferable method in all cases). It allows for additional multipliers where there is significant temporal loss, or use of third-party providers outside of their approved service area. In addition, please see response to comment #11

134. **Comment:** Many providers are seeing a 40-80% reduction in the number of credits produced, making many potential mitigation sites either no longer feasible or requiring significant increases in credit assessments.

Response: Please see response to comment #11

135. **Comment:** Data required for input into the tool will significantly increase the time and cost for assessing impacts. For mitigation projects, each reach will take an additional four hours with a two-

person team. Applied to monitoring roadway projects, TDOT would be responsible for an additional 2000 hours per year for monitoring alone; this figure does not include measuring physicochemical or biological parameters.

Response: The above percentage ranges are speculative. It is unclear what assumptions the commenter made to create these ranges. However, the Division does recognize that we are changing the way credits and debits are calculated. Based on a review of typical permitted impacts and proposed mitigation projects, the Division anticipates that required mitigation for impacts will decrease due to 1) factoring in the existing condition of a feature, and 2) more detailed analysis of the effects of impacts on stream resources (please see section 4 of the Stream Mitigation Guidelines). The savings in cost of mitigation will in many cases far outweigh the increased efforts in collecting pre-project ECS data. For mitigation projects it should be noted that monitoring physicochecmical and biological parameters is only required if the practitioner is projecting and seeking credit for lifting those parameters. In addition, most post-restoration monitoring will be done by the third-party mitigation providers..

136. **Comment:** On the debit side in Section 4.0, the Guidelines specify three methods for determining functional foot loss or debits. Options 1 and 2 are different methods of using the Stream Quantification Tool (SQT) and Option 3 is applying a 1.0 for ETWs or ONRWs and 0.8 for all other waters as a default. To consider a default value in this section would also lead one to assume a default value should be applied in the SQT credit side of the calculation as well.

Response: Defaults are provided in the Debit Tool to provide applicants flexibility in its use, while providing a conservative default of "healthy" where data to the contrary has not been established. However, credits are ultimately awarded by functional lift achieved in the field, and not by default values.

137. **Comment** : Is an ETW's Existing Condition Score always 1.0, or only if it's for exceptional ecology? For example would Mill Creek have a default of 1.0 ECS, just because of the presence of the rare crayfish, even though overall function is lower?

Response : The applicant may choose to establish the existing condition of an ETW stream reach. In the absence of other data the Division will use a default score of 1.0 for all ETWs. Also, please see response to Comment #138 below.

138. **Comment:** Is Option 1 an available option for ETW and ONRW waters? If Option 1 is not available, applying a blanket score of 1.0 to all ETW and ONRW waters on the debit side discourages any type of restoration, enhancement, or other mitigation activities that the stream could benefit from. Mill Creek and other ETW streams that are also 303d streams are prime examples of ETW waters that could greatly benefit from mitigation activities. Furthermore, many streams listed as ETW or ONRW have obvious impacts associated with them and are only listed because of location. A streams existing conditions should be assessed on the debit side and if the stream scores less than 1.0, that's what should be used.

Response: Yes, under Option 1 the applicant will be able to establish the actual existing condition based on measurement of all required parameters, for the very reason the commenter presents. While generating effective lift on ETW resources is not expected to be common, there are situations where a stream segment is listed as ETW solely because of the presence of a listed species or because it is locating on public lands, and therefore might well benefit from mitigation activities.

139. **Comment:** If the SQT can assess a stream lower than 0.4, then why is a default value used on the debit side?

Response: The intent behind applying a 'floor' of 0.4 on the debit side only is to prevent the elimination of a stream segment that may score less than 0.4 to have a compensatory offset requirement with so little mitigation that the Division cannot meet the spirit and intent of No Net Loss. In addition, under the TN Water Quality Control Act a stream has other designated usages with functions and values not captured

TDEC Response to Public Comments on Stream Mitigation Guidelines by the SQT or Debit Tool such as Recreation; Wildlife Watering, and Industrial Use. By applying a minimum floor of 0.4 on the debit side, we ensure that the public will always receive at least a foot-for-foot mitigation for channel replacement, meeting our mandate of No Net Loss and also maintaining other designated usages of waters.

140. **Comment**: In discussing functional lift elsewhere (5.1.2 Credits and the TN SQT), candidate restoration reaches are scored below 0.4. Any reason that you credit it for restoration, but not in impact? If other constraints are present that preclude restoration or enhancement, wouldn't it be better to impact a low-quality resource?

Response : The intent of the Division is to fully credit all resource lift provided for in a mitigation project, and therefore the minimum ECS score used in debiting is not applicable. The Division agrees that it would in nearly all cases be preferable to impact a lower-quality resource, and that should be reflected in the applicant's alternative analysis, as required by Rule.

141. **Comment** : As impacts to functionally degraded streams will incur fewer debits than impacts to reference-condition streams, we are pleased to see that TDEC has elected to ensure that "...any degraded stream will not be assessed as having an existing condition score of any less than 0.40 (page 18). In addition to this being a sensible policy decision, this baseline score for stream quality will help ensure that Tennessee's antidegradation rules are satisfied.

Response : Thank you for your comment.

142. **Comment:** TDOT recommends renumbering the steps to calculate debits Step 1, Step 2, and Step 3. It is unclear where step 1-4 are located. If this is not a numbering error, TDOT recommends reformatting Steps 1-4 to more closely match Steps 5-7 for clarity and consistency.

Response: The Division agrees with the commenter and will make this correction.

143. **Comment**: What was the rationale for using the factor in each of the PCS equations?

Response: The resource loss anticipated for each impact tier (as reflected in the PCS equations) was determined by evaluation of the effects of each impact type on all relevant parameters by multiple senior regulatory staff in both the USACOE and TDEC, as well as review by outside professional practitioners and designers of the TN SQT. Impact types that had similar projected losses in the post-impact PCS scenarios were then aggregated and placed into the appropriate Tier categories.

144. **Comment:** Example 8 in Section 5.1.1 states the TN SQT should not be used for projects that only install stormwater BMPs and do not include stream restoration (in channel) work. Please provide rationale. If debits are calculated for riparian zone and reach runoff impacts and mitigation is required, then why can't improving these metrics generate credit and provide mitigation?

Why wouldn't the TN SQT be used for projects that have just BMPs and no in-channel work? What about situations where there are stable channels that may only require planting and installation of BMPs? This seems like what would be considered enhancement now. In these situations wouldn't the TN SQT work as a tool to quantify lift, even without in-channel work?

Response: Stand-alone BMP projects that are not part of a larger compensatory stream mitigation project are unlikely to be perpetually maintained and protected in manner compatible with the requirements of a compensatory mitigation plan. Furthermore, projects that do not include in-channel alterations do not require ARAP permitting. However, these are guidelines, not rule, and a large enough scale project involving only SW BMPs is not inconceivable if the potential for significant lift could be demonstrated and long-term protection adequately guaranteed.

145. **Comment** : In the example project assessed by the SQT, is the change from 0.57 to 0.66 a reflection of increases in both the Physicochemical and Biological parameters, or just Biological?

Response : In the example given, the proposed condition score was calculated to be 0.57 without adding in any biological or water quality lift. By adding biological lift in the form of raising the TMI score from 22 up to 30, the proposed condition score would improve to 0.66.

146. **Comment**: In the example project the stream on the cattle farm has an increase in stream footage of 500 ft. However, this additional 500 ft. is considered as having the same functional foot score as the 3,000 ft. of existing channel. Where 500 ft. of channel did not exist previously, the existing functional foot score should be 0.0 and since the newly restored channel has a score of 0.57, then the increase in function should be 0.57 for new footage, not 0.37.

Response: The increase in functional value between the existing condition and the proposed final condition is calculated in its entirety, not broken into new length vs old length. The relevant numbers are the functional feet value of the 3500 end-of- project channel vs that of the 3000 feet of existing condition channel, and the resulting increase in total functional-feet of lift does capture full lift for the additional stream length as the commenter describes.

147. **Comment**: When determining the existing and proposed condition scores for a project we suggest explaining what constitutes a reach and describing (possibly with photos) when a reach break is appropriate (whether it is order, flow regime, condition, landscape position, physical barrier, etc)

Response : The examples listed by the commenter are all potential factors in determining a break point between reaches. Site factors that might result in scoring one reach differently than another could be myriad, variable, and inconsistent. For example, an intersection with another channel (order) might or might not necessitate a breakpoint in existing condition. Guidance in stream reach segmenting is not provided in the SMG, but may be found in the *TN SQT / Debit Tool Rapid Data Collection Methods* manual, available on the Division's Compensatory Mitigation webpage.

148. **Comment:** Can it be assumed that all Priority I restoration projects will achieve a 0.8 score?

Response: No. Not all Priority 1 projects will necessarily be able to achieve that level of functionality, though most will attempt to do so. In some scenarios water quality factors or other site constraints beyond the control of the permittee or practitioner may limit the amount of lift that is demonstrable.

149. **Comment:** Section 5.2 discusses mitigation practices such as riparian buffer width, and later in the document it specifies a minimum 50 ft. width. Is there an increasing score on the SQT between 50 ft. and 200 ft.?

Response: Yes. The SQT awards higher scores for greater riparian buffer widths provided, up to 200 feet in width.

150. **Comment:** Are there mechanisms to score functional feet of impounded streams? How is the existing condition of an impoundment scored using the SQT? There is no guidance for evaluating impoundments in the SQT.

Response: The SQT and Debit Tools can be used to score functional feet of stream segments impacted by impoundments. In addition to the footprint of the dam itself and the zone of impoundment, there also may be lengths of channel upstream and downstream of the impounded reach that can be shown to be negatively affected (hydrologically, geomorphically, biologically, even chemically). However, we recognize that these initial versions of the Tools may not adequately measure the full impact or full potential for lift in impoundment situations. The Division is very interested in exploring dam removal restorations, and is committed to continually working with mitigation providers to make the Tools more useful in those scenarios.

151. **Comment:** The SQT relies heavily on geomorphology, yet the category accounts for only 20% of the FFS. For a majority of mitigation projects, most of the effort and dollars will be spent on improving geomorphology. Consider adjusting to give this category 40% of the total score and cutting the physicochemical and biology score to 10% each.

Response: The Division agrees that most of the design, physical work, and expenditure is usually directed at geomorphology. However, the resulting lift may be expressed in terms of biology or water quality. If experience shows over time that the SQT categories are not appropriately weighted, we will make needed changes accordingly. The Division plans to hold regular meetings with practitioners to discuss lessons learned and make continual improvements to the guidelines.

152. **Comment:** [The performance standards in Section 6 mention] "floodplain connectivity, riparian vegetation, and lateral migration." But then the next example discusses getting lift just from addressing riparian vegetation in a stable system. It seems many projects may address some of these parameters, but not necessarily all three if one or two are already functioning. Then it mentions two additional parameters (bed form diversity and large woody debris) and says that the above parameters must be fully functioning at the end of project monitoring. Do you mean that all 5 of these parameters must be functioning? And what does "fully" functioning mean as opposed to just "functioning"? There have been discussions about the fact that the woody debris parameter may not be functioning at the end of the monitoring period and the next section about the Vegetated Riparian Buffer says that in reference to the buffer "many projects will not reach a functioning state at the end of the monitoring period."

Response: The language in Section 6 states that "...compensatory mitigation projects, at a minimum, should address floodplain connectivity, riparian vegetation, woody in-channel habitat, and lateral migration if theses parameters are not functioning." As the commenter suggests, some of these parameters may already be functioning. The intent of the language "...should be fully functioning" is that the goal of any compensatory mitigation project should be a result of full function for those parameters. The level of function actually achieved will dictate the amount of credits actually released.

153. **Comment:** Riparian vegetation is within the Geomorphology category among six parameters yet the Hydraulics category only has one parameter, floodplain connectivity. It is suggested that riparian vegetation parameter be moved to the Hydraulics category.

Response: The Division agrees that fitting Riparian Vegetation into the correct category is perplexing. It has been argued that Riparian rightly belongs in the Biology category, others think it belongs under Physiochemical because of its effects on water temperatures and nutrients/organic carbon. Because Riparian Vegetation relates closely to channel stability and woody debris metrics, it has been included under geomorphology. We may re-evaluate this choice as we gain experience with the SQT over time.

154. **Comment:** There is no mention of wetland restoration within stream buffers in the proposed guidelines. For ecosystem restoration projects (stream and wetland mitigation), how is stream credit improved by restoring wetlands in riparian buffers? Please provide guidance on how to score wetland restoration within stream buffers to improve stream credit.

Response: Wetland restoration within stream buffers is an emerging practice, and presents regulatory and crediting complications that are not addresses specifically in the Stream Mitigation Guidelines, but rather will be worked out through consultation with the IRT. Some of the lift provided by wetland restoration within a stream buffer can be currently captured by the TN SQT in the reach runoff parameter.

155. **Comment:** Too much weight seems to lay on catchment hydrology, a parameter that can't be significantly changed without addressing the entire watershed. This favors small projects and reaches such as first order streams, where you're more likely to affect the entire watershed. Is the intention to favor small-scale projects over large-scale? What about at urban sites? With urban and large-scale sites this parameter will diminish the functional lift dramatically.

Response: From a practical sense, most proposed impacts and most mitigation projects are located on smaller streams. There is no intent to favor small-scale projects, rather an incentive to select sites that allow for more functional lift. Using functional lift instead of linear feet/ratios should make it easier to generate credits on urban streams, not less so, since so many other metrics will have low existing condition scores.

- 156. **Comment:** Are projects with a currently approved prospectus going to be "grandfathered in" under the 2004 mitigation guidelines? These changes have the potential to shut down a project middesign, after significant time and resources have gone into a project with the expectation that credits would be generated according to the previous ratio method; and after a budget that corresponds to those credits has been created. Time and resources of the practitioner and of the IRT will have been in vain. When will these new guidelines take effect?
- 157. **Response:** The new guidelines will take effect as soon as the public comment period concludes and resulting revisions to the guidelines have been made. The USACOE and TDEC have been discussing the transition for third-party bank and ILF projects with the practitioners for nearly a year, including providing training courses, and had already set a March 1, 2019 deadline for any project not yet at the Draft Mitigation Banking Instrument stage will be evaluated using the functional-foot methodology outlined in the TN SQT (which is separate from the Stream Mitigation Guidelines that are the subject of this current public notice and response to comments). Based on our discussions with practitioners statewide in various stages of project development, we are confident that the practitioners will be ready and able to adopt the new functional methodology in their upcoming projects.
- 158. Comment: How are valley fills or plugs evaluated in the SQT where there is no channel to measure?

Response: Where stream channels have been eliminated due to anthropogenic activities or excessive sedimentation from lack of competency and the applicant is proposing to re-establish them, a value of 0.0 can be entered for the relevant metrics. Values for the proposed condition would be entered as in any other proposal.

159. **Comment:** We believe that recommending applicants perform these assessments for the TN debit tool encourages them to underestimate the existing stream condition for their benefit. Option 2 even allows the applicant to choose metrics that could also play to their advantage.

Response: The intent is to allow the applicant to choose the level of front-end investment in the project that best meets their project goals and budgets. All mitigation proposals are reviewed by the IRT, and all permit application using the Debit Tool are reviewed by the regulatory agencies. While it is always possible that an applicant may submit inaccurate information, by intent or by mistake, the likelihood of this occurring is no more than under our previous guidelines. The IRT and regulatory agencies believe that this shift to more measurable, quantitative methods will make it easier to check on the quality of submittals, not harder.

160. **Comment**: TDEC does not indicate in the guidelines a method of verifying the existing condition assessments to ensure that the assessments have been performed correctly.

Response: See responses above under Comments #118 and #159

161. **Comment**: Providing the option to collect data will likely delay the application review process and issuance of permits, particularly for projects that propose impacts to numerous features (i.e. transportation projects).

Response: The single greatest obstacle to permit review/issuance in our state is the lack of mitigation credits available for purchase. By creating a consistent and defensible data-driven method for assessing debits and credits, the Division hopes to greatly increase the number of mitigation credits available.

The initial collection of site data may take a little more time (when chosen as an option by the applicant), and may add some addition time it takes to review such an application,, but should be more than offset by the ability of applicants to provide mitigation through the purchase of already existing mitigation credits and not have to spend significantly more time and expense in developing a site-specific permittee-responsible mitigation project.

162. **Comment:** We are in support of TDEC simplifying the impact side of the debit tool and generating a qualitative assessment or checklist that will still satisfy the TN debit calculator versus providing applicants with the option of performing quantitative assessments.

Response: We must disagree. The option of performing a quantitative assessment of existing condition should be available to applicants. There is no requirement for applicants to avail themselves of that option. We remind the commenters that the SQT and Debit Tool are guidelines, not rule, and non-banking applicants do not have to utilize them.

163. **Comment:** We are concerned that the 50' buffer requirement may not follow what is indicated in the 2008 Compensatory Mitigation for Losses of Aquatic Resources; Final Rule which states "If buffers are required by the district engineer as part of the compensatory mitigation project, compensatory mitigation credit will be provided for those buffers." Although it is recognized that the Division is not subject to the Rule, we understand that the Guidelines are supported by the USACE and that this buffer requirement should be further clarified. Currently, no credits are being provided for the first 50' of stream buffer since it is treated as a "minimum" buffer requirement to generate functional lift.

Response: The 50-foot minimum buffer for compensatory mitigation projects is considered to be a performance standard, and can have some flexibility in terms of pinch points and averaging where appropriate. Although it may be a minimum requirement, this range of buffer establishment does provide significant credit as well, lifting the metric score from zero (no buffer) to 0.7 (50-foot buffer).

164. **Comment:** Stream Mitigation Threshold Lengths. Stream mitigation in Tennessee is currently required when impacts that occur either individually or cumulatively exceed 200 linear feet per Stream Catalog Unit. While it is understood that the Division has historically determined that a threshold length of less than 200 linear feet is considered de minimis, we respectfully request that TDEC reconsider this threshold as two adjacent states (Georgia and North Carolina) both require stream mitigation for impacts that exceed 100 linear feet. We think that if TDEC lowers the mitigation threshold to 100 linear feet, this will likely create a more stable and practical market for mitigation.

Response: These guidelines do not establish linear threshold requirements for mitigation: that is done through the applicable rules and General Permits issued pursuant to those rules. The current Guidelines note that culverts up to 200 feet in length as necessary for road construction do not require mitigation because that is the threshold set in the applicable General Permit. A few additional impact types in the current Guidelines have differing linear threshold limits, but the current Guidelines are vague and confusing on threshold limits. The revised Guidelines have attempted to make these thresholds more clear, and also acknowledge that these are derived from the various General Permit conditions and applicable rules.

165. **Comment:** The Draft Tennessee Debit Tool (Debit Tool) has been developed by the Division to determine resource value loss from impacts. However, as we understand it, no other state is currently utilizing a Debit Tool or SQT to derive debits.

Response: Several other states are in the process of creating and implementing a similar methodology, including Wyoming, Colorado, Georgia, Minnesota and both the USACOE and EPA are encouraging this change.

166. **Comment:** The Guidelines and Debit Tool overestimate mitigation requirements due to the Minimum Existing Condition Score, the Standard Condition Score, lack of segmentation for different

TDEC Response to Public Comments on Stream Mitigation Guidelines flow regimes, and the fact that the Debit Tool operates without the flexibility of the SQT in considering certain Functional Categories.

Response: Please see responses to Comments 167 through 171 below.

167. **Comment:** The rationale as explained by the Division at the December 11, 2018 public informational meeting was that in circumstances where there is a functional score below 0.4, a total loss might not account for a foot-for-foot replacement. However, we believe that this justification is counter to the reasoning behind establishing a quantitative assessment for streams. While we acknowledge the need to protect even currently degraded streams, we believe that TDECs designation of the proposed minimum ECS of 0.4 appears arbitrarily high. When the SQT is implemented, a score of zero cannot be achieved, therefore the minimal protection requirement is satisfied.

Response: The intent behind applying a 'floor' of 0.4 on the debit side only is to prevent the elimination of a stream segment that may score less than 0.4 to have a compensatory offset requirement with so little mitigation that the Division cannot meet the spirit and intent of No Net Loss. In addition, under the TN Water Quality Control Act a stream has other designated usages with functions and values not captured by the TN SQT or Debit Tool such as Recreation; Wildlife Watering, and Industrial Use. By applying a minimum floor of 0.4 on the debit side, we ensure that the public will always receive at least a foot-forfoot mitigation for channel replacement, meeting our mandate of No Net Loss and also maintaining other designated usages of waters.

168. **Comment:** Based upon our interpretation of the Guidelines, it is possible that an impaired stream could be assessed to have an ECS of less than 0.4, yet still have functional value. The new equivalency is function, not feet. The SQT itself establishes minimal protection for streams. The first Measurement Method in the SQT is the Watershed Land Use Runoff Score. For every stream, the Watershed Land Use Runoff Score will result in a numeric value greater than zero that establishes a baseline. Currently, a culverted reach is considered to have no function (defined in the existing 2004 Stream Mitigation Guidelines for the State of Tennessee as a total loss of stream or Elimination). If you use the SQT, even a currently culverted section of stream would generate a score for the Watershed Land Use Runoff Score, and therefore be afforded minimal protection.

Response: While the commenter is correct that it is difficult to have a stream segment that would have an existing condition score of literally zero, including within a pipe or culvert, other functions and values tied into the Designated Uses established in the TWQCA would be completely eliminated in this scenario. Therefore a minimal protection standard will be achieved by use of the minimal ECS of 0.4.

169. **Comment:** The Standard Condition Score also inflates mitigation requirements because it conveys an extraordinarily high level of function, particularly for the parameters that are the most difficult and costly to evaluate. For example, the 0.8 Standard Condition Score corresponds to a buffer width of 100 feet. While this is not difficult to measure, there are many impacts that occur on channels with less than 100-foot buffers. A permittee should not have to assume that this is the default condition. The assumed levels are high in the Functional Categories that are the most difficult, time consuming, and costly to measure, which are Physicochemical and Biological...The Guidelines require the permittee to spend significant money to sample and score benthic macroinvertebrates (or fish), or assume that the TMI is significantly higher than a typical watercourse. At a minimum, the index should be adjusted so that 0.8 corresponds to a TMI of 32.

Response: The standard condition score for all metrics has a default of 0.8 (fully functioning) because the Division must be conservative and assume the stream is healthy is the absence of data to the contrary. The default of 0.8 is not considered an extraordinarily high level of function, whereas a default condition score of 1.0 would be. Applicants may choose whether to utilize standard existing condition scores or submit data to the Division showing where actual conditions may differ. The guidelines do not require all applicants to collect benthic data; it is an option applicants can explore. In many cases benthic data for a waterbody will already be available through TDEC. The benthic TMI establishes a score of 32 as the minimum threshold for meeting its designated use, and a lower score than this is considered a

TDEC Response to Public Comments on Stream Mitigation Guidelines condition of Impairment. Therefore the Division believes a TMI of 32 is most appropriately considered to fall within the "Functioning At Risk" range within the SQT, and is not representative of a Fully Functioning condition score of 0.8.

170. **Comment:** These scoring issues are compounded on intermittent streams. Streams with a more limited flow regime are likely to score a lower TMI, but waiting for seasonal hydrology adds time delays to the costs associated with a project. Evaluating intermittent and perennial streams on the same scale also has the effect of overestimating the aquatic function of intermittent channels, as those functions are performed on a limited basis. The US Army Corps of Engineers has given some consideration to flow regime by evaluating ephemeral channels on a 0 to 0.4 scale rather than a 0 to 1.0 scale. Consideration should be given to evaluating intermittent channels based upon a fraction of the 1.0 scale due to the limited aquatic function associated with discontinuous hydrology.

Response: The commenter is correct that not all sites have equal potential for functional lift. The Division has found that some intermittent systems provide excellent biological support and other functions for significant portions of the year. The applicant may choose whether to sample TMI during periods of flow or utilize standard existing condition values, as best fits their project goals and timelines.

171. **Comment:** One of the benefits of the SQT is the flexibility allowed by choosing which Functional Parameters to include in an assessment. Functional lift can be calculated by evaluating the change in three, four, or five Functional Categories. However, the Guidelines require a score for all of the functional parameters when considering impacts. When the Division conducted an SQT Workshop in November 2018, field exercises involved evaluating (i) a previously constructed mitigation stream channel and (ii) an impaired channel. Both channels were only evaluated for three of the five Functional Categories. The impaired channel had an Existing Condition Score (ECS) of 0.26 utilizing the three scored categories. If averaged across five categories, this would be an ECS of approximately 0.44. Utilizing the standard score of 0.8 in the other two Functional Categories increases the ECS to 0.58. On a 300-foot impact, 42 additional mitigation credits would need to be purchased, thus resulting in additional significant expense to the permittee.

Response: The commenter is correct that in some situations the expense of measuring all metrics in all five Functional Categories in establishing an existing condition score instead of utilizing some or all of the standard condition values will be offset by the potential to demonstrate less functional loss and therefore the need to purchase less credits. In other situations, it will clearly be in the applicant's interest to not evaluate every metric, either to save time, or where evaluation of additional metrics will not result in any meaningful change in mitigation requirements. This flexibility for the applicant to make business decisions appropriate to their situation is intentional.

172. As a result of the transition to quantitative mitigation crediting, credit prices are going to dramatically increase on a per unit basis. While the exact increase in costs for mitigation remains unknown, the proposed Guidelines most certainly will result in permittees providing more mitigation than should be required. While the SQT is a robust tool for evaluating mitigation projects with an established record in other states, the Debit Tool has not been evaluated and refined to the point that it can be reliably implemented without an undue burden on the permitted public.

Response: While the commenter may be correct that, due to the change in currency from a ratio-based credit to a credit based on quantified functional lift, the cost of a "credit" *on a per unit basis* may increase, the amount of mitigative offset produced by each credit will also change and fewer functional credits will be required for a typical project. The Debit Tool has been evaluated and refined over the last year through extensive testing on actual project proposals, and the Division is confident that it can be reliably implemented, and that in aggregate it will result in more accurate mitigation requirements for permittees, due to the refinements in impact tier categories and evaluation of existing stream condition giving a more precise quantification of incurred losses.

173. **Comment:** On page 8 TDEC discusses how the guidance was prepared by the division in collaboration with the IRT. The agencies in the IRT were all environmental in nature and were

instrumental in the development of the guidance and therefore did not adequately represent the stakeholders which will be saddled with implementing these requirement. Nowhere apparent in the document was input allowed by agencies which have a vested interest in the outcome. Just to name a few are the MS4's, the Home Builders Association, Cities or Counties, American Society of Professional Engineers and can I go on. TDEC is imposing requirements that are being put forward by environmental groups that have a vested interest in the outcome without valid input from agencies which will be required to implement the specific guidelines.

Response: In drafting these revisions and in the crafting of the debit tool and SQT, the Division collaborated not only with other resource agencies but with mitigation providers, engineers, consultants, and other academic subject matter experts. It is also based on years of experience by the regulatory agencies in evaluating permitted impacts and mitigation projects, and was written specifically with these types of projects and stakeholders in mind. The Division has held multiple statewide joint stakeholder outreach events with the USACE over the previous few years where presentations and Q&A sessions related to compensatory mitigation initiatives were facilitated. In June 2018, early in the drafting process the Division public noticed and held a statewide stakeholder listening session on what changes stakeholders, such as the ones noted above would like to see in the revised Guidelines, and those comments influenced the draft document. In addition, the Division is using this current public notice and comment period precisely for the purpose of gathering wider stakeholder input, and incorporating those comments into the final version where appropriate..

174. **Comment:** The wording is unclear – please confirm that evaluations for mitigation will only be required for IPs. Please make it clear throughout the document which statements only apply to IPs.

Response: The commenter is correct that mitigation only applies to some Individual ARAP situations, not activities that individually or cumulatively are eligible for general permit coverages. The document will be revised as suggested to make this clear.

175. **Comment:** On page 17, the applicant for an ARAP will be cities, counties or developers, and they are required to perform the assessment of the stream using the new tool... This is an unfounded mandate.

Response: Aquatic Resource Alteration Permits must comply with all applicable Statue and Rules. This includes requirements for compensatory mitigation sufficient to offset any appreciable permanent loss of resource values. The Stream Mitigation Guidelines are guidance to inform stakeholders of the preferred process for evaluation of resource loss and mitigation that will satisfy the requirements of Rule and Statute. They are intended to be flexible, and it should be noted the Guidelines do not mandate that any assessment of the stream using the new tool be performed, and provide an option for that scenario. Applicants may also propose assessing a stream proposed to be impacted using alternative methods and metrics if they can demonstrate scientific equivalence and validity of an alternate technique. These revised Guidelines do not constitute any type of unfounded mandate for permit applicants seeking to degrade state waters.