US Army Corps of Engineers ®
St. Paul District

SPECIAL PUBLIC NOTICE

Date: April 18, 2023

ANNOUNCEMENT OF RELEASE OF STREAM MITIGATION PROCEDURES

The U.S. Army Corps of Engineers St. Paul District Regulatory Division (Corps) is announcing the release of its Stream Mitigation Procedures, Version 1.0 (Stream Procedures), applicable in both Minnesota and Wisconsin.

The Corps developed the Stream Procedures to support consistent, transparent, and predictable science-based decision making for activities in streams regulated under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. The document describes the Corps' use of the Stream Quantification Tool (SQT) and Debit Calculator to inform its permitting and mitigation decisions for regulated activities in streams. The Corps developed content of the Stream Procedures based on its responsibility for determining when compensatory mitigation is necessary to offset unavoidable losses of aquatic resource function resulting from permitted activities and with consideration for its use of the Minnesota SQT and Debit Calculator over the last several years.

The Minnesota SQT was finalized and released in 2019. The Corps is currently working with the U.S. EPA and others on development of the Wisconsin SQT and expect to release it later this year. The tools provide a consistent, efficient, and repeatable approach to assess functional loss (debits incurred) at stream impact sites and functional lift (credits generated) at stream restoration sites.

The Corps will host an online outreach event on May 10, 2023, to review contents of the Stream Procedures and provide an opportunity for the public to ask questions about implementation of this document. The target audience is stakeholders, consultants, potential stream bankers, and other agencies.

If you are interested in participating in this outreach event, please reach out to stpaulsqt@usace.army.mil to receive a calendar invitation. Please let us know if you are interested in attending, but unable to make the May session. We will hold additional outreach events later in the summer if there is demand.

The Corps welcomes any comments related to the content and use of the Stream Procedures. The Corps will consider all comments and provide updates in subsequent versions of the Stream Procedures as needed. If you would like to submit written comments, you may email those

comments to stpaulsqt@usace.army.mil. In the absence of email, you may mail comments to: U.S. Army Corps of Engineers, St. Paul District Regulatory Division, c/o April Marcangeli, 250 N. Sunnyslope Road, Suite 296, Brookfield, WI 53005.

US Army Corps of Engineers ®
St. Paul District

St. Paul District Stream Mitigation Procedures

VERSION 1.0

April 2023

TABLE OF CONTENTS

1 INTRODUCTION STREAM MITIGATION PROCEDURES

Purpose:
An important and long-standing component of the U.S. Army Corps of Engineers (Corps) Clean Water Act Section 404 (Section 404) and Rivers and Harbors Act Section 10 (Section 10) Regulatory Program is the practice of using compensatory mitigation to offset unavoidable losses of aquatic resources. The 404(b)(1) Guidelines (40 CFR Part 230) require that impacts to aquatic resources be avoided and minimized to the maximum extent practicable, and the Federal Mitigation Rule establishes standards for compensatory mitigation. The Corps may require compensatory mitigation to offset losses of aquatic resource function resulting from permitted activities after an applicant has demonstrated all appropriate and practicable avoidance and minimization. Compensatory mitigation includes the restoration, enhancement, establishment, or in certain circumstances preservation of aquatic resources.

The purpose of the U.S. Army Corps of Engineers St. Paul District Regulatory Division's (Corps) Stream Mitigation Procedures, Version 1.0 (Stream Procedures), is to provide a framework and methodology to inform regulatory decisions and compensatory mitigation requirements related to jurisdictional streams in Minnesota and Wisconsin. The Stream Procedures applies to: (1) projects with stream impacts that require a Section 404 or Section 10 permit and notification to the Corps prior to regulated activities, (2) projects where the Corps has determined compensatory stream mitigation is necessary, and (3) all stream restoration activities associated with generating mitigation credits, including mitigation banks, in-lieu fee programs, and permittee responsible mitigation.

The Corps developed this document in coordination with the United States Environmental Protection Agency (USEPA), Minnesota Department of Natural Resources (MN DNR), Minnesota Board of Water and Soil Resources (BWSR), Minnesota Pollution Control Agency (MPCA), and Wisconsin Department of Natural Resources (WDNR). This document does not alter the need for applicants to coordinate with other federal or state agencies, as required. The agencies strive to align compensation requirements whenever possible, but occasionally the type and amount of compensation may vary between agencies due to differences in regulatory requirements. The Stream Procedures address, among other topics, how the Corps intends to use the Minnesota Stream Quantification Tool (MNSQT) and Debit Calculator to quantify stream losses (debits) and restoration gains (credits). The Corps has used the experience gained since release of the MNSQT to inform the content of this document. Over time, the Corps expects to refine the approach to evaluating stream impacts and compensatory mitigation as appropriate based on feedback and lessons learned through implementation. The Corps will provide updates to these Stream Procedures when warranted to promote sound decision-making based on new information, evolving science, best practices, and new developments in restoration sciences or interagency coordination efforts.

These Stream Procedures do not carry the weight of statute, regulation, or policy. Rather, they are a mechanism to provide more predictability by describing rules of thumb and descriptions of factors that influence Corps determinations regarding compensatory mitigation in the St. Paul District. Due to the inherent variability in aquatic resource functions and the setting and context of proposals, it is not possible or appropriate to define a one-size-fits-all threshold for

determining if or how much compensatory mitigation is required. However, the Corps may develop more refined thresholds over time as experience with the Stream Procedures increases.

This document does not affect jurisdiction under Section 404 or Section 10. The Corps determines the jurisdiction of waters consistent with current rules, guidance, or procedures in place at the time (reference 33 CFR 328.3 and applicable guidance). The Stream Procedures do not replace project-specific review and discussion between the Corps and applicants or mitigation site sponsors. Project-specific discussions between the Corps and applicant or sponsor are necessary to ensure the Corps applies appropriate judgment regarding compensation requirements for impacts at development sites or credits gained at mitigation sites. The Stream Procedures do not negate or diminish an applicant's responsibility to comply with all other laws and regulations. The Corps will determine appropriate compensatory mitigation required to offset unavoidable impacts to aquatic resources in accordance with the Federal Mitigation Rule. Users of these Stream Procedures should also refer to the Federal Mitigation Rule.

Authority:
Section 404 of the Clean Water Act (Section 404): In accordance with Section 404, the Corps is delegated the responsibility to administer a permit program regulating the discharge of dredged and fill material in waters of the United States. The purpose of Section 404 is to restore and maintain the physical, chemical, and biological integrity of the nation's waters. The definition of "waters of the United States" is provided at 33 CFR 328.

Section 10 of the Rivers and Harbors Act of 1899 (Section 10): In accordance with Section 10, the Corps is delegated the responsibility to administer a permit program regulating most work and structures in, on, over, or under navigable waters of the United States.

2 EVALUATION OF STREAM IMPACTS AND FUNCTIONAL LOSS (DEBITS)

2.1 STREAM IDENTIFICATION

For the purposes of this document, "streams" are channels of flowing water on the landscape containing a discernable bed, bank, and ordinary high water mark (OHWM). They are sometimes referred to as tributaries or watercourses. Streams do not need to flow year-round; they may be perennial, intermittent, or ephemeral; and they can be natural, man-altered, or man-made. It is important to note that some streams may have been historically relocated or channelized and are now commonly referred to as ditches. Some channels referred to as ditches may be jurisdictional under the Clean Water Act. This means that it is critical for project proponents to accurately identify these features when delineating aquatic resources at their site.

There are many ways to identify whether a feature on the landscape is a stream using geographic information services (GIS). Although desktop methods to identify streams can be very reliable, project proponents or their consultants may need to conduct site visits to identify the ordinary high water mark (OHWM), confirm the presence or absence of bed and bank, or determine flow

regime. The Corps may also need to conduct site visits to determine federal Clean Water Act jurisdiction.

In the field, project proponents should delineate streams in accordance with Regulatory Guidance Letter 05-05, *Ordinary High Water Mark Identification* (USACE, 2005), and the *National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams: Interim Version* (David et al, 2022). The OHWM is a line on the shore established by fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas. To aid project proponents, the Corps has developed a Description of Stream Features Worksheet (Appendix A). Project proponents can aid the timely and accurate review of their proposal by providing OHWM criteria and other stream characteristics on the most recent version of the worksheet when submitting an aquatic resource delineation report identifying streams. Project proponents completing this worksheet should collect and provide information about the stream's flow regime, dimensions, site history, landscape position, unique features, and data sources or site visits used to make those determinations.

When delineating between aquatic resources, the Corps will use the elevation of a consistently observable OHWM to identify the limits of a stream and the high water mark of a lake. In some cases, the elevation of the OHWM may not be continuous throughout a stream reach, such as when streamflow disperses in a broad wetland and then reforms a channel where it leaves the wetland. Portions of streams may also occasionally be subsurface, such as in karst geology.

While many sites contain both stream and wetland resources, they are not all considered to be true stream-wetland complexes. Physical characteristics used to distinguish the OHWM may be inconclusive for sites that are true stream-wetland complexes. Stream-wetland complexes are unique systems where the channel location may move frequently, braid, or be indistinguishable from the surrounding wetland complex. The adjacent riverine wetland in these complexes is located within the floodplain or riparian geomorphic setting and the overland flow from the channel is the primary wetland water source. The stream types (Rosgen, 1996) may be single-thread or anastomosed. The applicability of MNSQT parameters for use on anastomosed stream/wetland complexes can be found in Section 2.3 of the *Minnesota Stream Quantification Tool and Debit Calculator User Manual* (MNSQT Steering Committee, 2019). Proponents seeking stream credit for restoration work within anastomosed systems should coordinate early with the Corps to discuss appropriate data collection for the MNSQT.

2.2 Stream Impacts Requiring Compensatory Mitigation

The Corps has responsibility for determining if compensatory mitigation is necessary to offset unavoidable losses of aquatic resource function resulting from permitted activities. The Corps will evaluate permit applications and determine the need for stream compensatory mitigation on a case-by-case basis by considering the potential individual, secondary/indirect, and cumulative adverse impacts to the aquatic environment resulting from the regulated activities. The likelihood that the Corps will require stream mitigation increases as stream impacts and loss of

stream functions increase. General condition #23 of Nationwide Permits includes a compensatory mitigation requirement for all losses of stream bed that exceed 3/100-acre (1306 square feet) and require pre-construction notification, unless the district engineer determines that some other form of mitigation would be more environmentally appropriate or if the adverse environmental effects of the activity are no more than minimal. The St. Paul District considers the area loss of stream bed while also considering linear distance of impact and other variables when evaluating compensatory mitigation for activities impacting streams within Minnesota and Wisconsin. The Corps will also evaluate the duration of impacts, severity of impacts, and the current quality of the stream when determining if stream mitigation is necessary. Below are general guidelines on these key factors and likelihood that the Corps will require compensatory mitigation.

Duration:

- *Is the proposed impact going to be temporary or permanent?*
    - The Corps is more likely to require stream mitigation for permanent impacts, as these impacts are not restored to preconstruction conditions. A permanent discharge of dredged or fill material within a stream may include changing a stream bed to dry land, increasing the bottom elevation of a stream, or changing the use or function of a stream.
    - The Corps rarely anticipates requiring stream mitigation for temporary impacts, if these impacts are restored in a timely manner to preconstruction conditions, contours, and elevations after construction. However, temporary impacts with a long duration may result in a temporal loss of function that is more than minimal (loss of vegetation, etc.). In those cases, the Corps may require stream mitigation to offset that loss.

Severity:

Table 1 below represents example activities classified in Impact Severity Tiers 0-5. Each Impact Severity Tier includes a different level of adverse impacts to stream functions. The overall loss of stream functions increases as the Impact Severity Tier increases. The example activities are generally representative of each severity tier, not definitive. Some example activities are even listed in multiple Impact Severity Tiers (e.g., bottomless arch culverts). Identifying the appropriate Tier will depend on the proposed design and extent of impacts to stream functions. The Corps will determine the appropriate Impact Severity Tier when evaluating whether stream mitigation is necessary, and project proponents are encouraged to provide a preliminary determination with their permit applications (i.e., describe in their applications which stream functions they expect will be adversely impacted by their project).

Table 1. Impact Severity Tier table derived from Debit Calculator workbook described in Section 2.3.

Tier	Description (Impacts to function-based parameters)	Example Activities
0	No permanent impact on any of the key function-based parameters	Bio-engineering of streambanks, stream restoration
1	Impacts to riparian vegetation and/or lateral migration	Bank stabilization, two-stage ditch, utility crossings.
2	Impacts to riparian vegetation, lateral migration, and bed form diversity	Utility crossing, two-stage ditch, bridges, bottomless arch culverts
3	Impacts to riparian vegetation, lateral migration, bed form diversity, and floodplain connectivity	Bottomless arch culverts, minor channelization
4	Impacts to riparian vegetation, lateral migration, bed form diversity, and floodplain connectivity. Potential impacts to temperature, processing of organic matter, and macroinvertebrate and fish communities	Channelization, box culverts, short length pipe culverts, weirs/impoundments/flood, and minor relocations
5	Removal of all aquatic functions	Piping, relocation, removal or complete fill of channel

- *Does the proposed activity fall within Impact Severity Tier 0?*
    - If yes, the Corps will not require stream mitigation for Tier 0 activities, as there are no adverse impacts to stream functions.
- *Does the proposed activity fall within Impact Severity Tier 1-4?*
    - When the proposed activity falls within Impact Severity Tier 1 through 4, the Corps will evaluate it in combination with the other factors listed below (e.g. length, duration, quality of stream, etc.) on a case-by-case basis.
- *Does the proposed activity fall within Impact Severity Tier 5?*
    - When projects involve piping, removal, or complete fill of the channel, the Corps will evaluate this in combination with the other factors listed below. There is a high likelihood that the Corps will require compensatory stream mitigation when project impacts fall in Severity Tier 5.
    - When a project proponent proposes relocation of a stream for a purpose other than stream restoration, the Corps may require the project proponent to use the SQT to demonstrate whether there will be an overall loss or gain of stream functions in the relocated channel. If the results of the SQT analysis show an overall loss post relocation, the Corps will likely require stream mitigation.

Length:

- *What is the length of impact(s) for the overall project?*
    - The Corps is more likely to require stream mitigation as more linear feet of stream are impacted and the overall loss of stream function increases.
- *Does the proposed activity impact one contiguous stream reach or several separate reaches?*
    - The Corps will evaluate the overall loss of stream functions in all stream reaches impacted and associated with a permit application.

- If a proposal includes impacts to several separate reaches within the same overall project and watershed, such as in linear transportation or utility projects, the Corps will evaluate the overall net functional loss when deciding whether stream mitigation is necessary.
- If a proposal includes impacts to several separate reaches that result in both stream functional loss and functional lift, the Corps will evaluate the overall net functional change. For example, one stream reach may be adversely impacted by a new culvert installation while a separate stream reach impacted results in a lift of functions by removing a piped culvert for a clear span bridge.
- Based on evaluations of stream impacts in the St. Paul District in recent years, the Corps has developed the following linear foot thresholds for activities in each severity tier. The Corps will consider these linear thresholds as a general starting point for considering compensatory mitigation. The Corps will evaluate the total linear feet impacted in combination will all other factors, including the duration of impacts and quality of stream.

Impact Severity Tier	Linear foot threshold
Tier 1	900
Tier 2	500
Tier 3	300
Tier 4	200
Tier 5	150

Quality of Stream:

- *Does the proposed activity occur on a stream that has a special designation? Examples of special designations include outstanding resource waters, trout streams, warmwater/coldwater streams, or other state designations. Is there available water quality or biological data (e.g. County, State, or Federal monitoring data) that would indicate how well the reach is currently functioning?*
  - If current designations or data suggest that the stream reach impacted is high quality and functioning well, the overall loss of functions caused by the proposed activity will be greater and the Corps is more likely to require stream mitigation.
  - If current designations or data suggest that the stream reach impacted is lower quality and not functioning well, the Corps will evaluate all other factors when determining whether stream mitigation is required.
  - If there are no special designations or public data available and adverse stream impacts are greater than the linear foot thresholds listed above, applicants should fill out the Stream Features Worksheet to aid the Corps' evaluation of quality.

The combination of severity, length, duration, and quality ultimately inform whether compensatory mitigation is required. No single factor alone can dictate that requirement. Due to

the infinite combinations of these factors, a definitive threshold for any individual factor is impossible. A primary objective in these Stream Procedures is to avoid establishing a one-size-fits-all definitive threshold that inadvertently dictates a compensatory mitigation requirement where one is not appropriate. Another objective in these Stream Procedures is to avoid requiring onerous data collection merely to determine that compensatory mitigation is not required. The Corps acknowledges that there is still subjectivity in determining if compensatory mitigation is required, and that subjectivity does not align with the goal of predictability. For the overall benefit of the regulated public, Version 1.0 of these Stream Procedures tries to maximize predictability while minimizing the risk of unnecessary data collection and inappropriate compensatory mitigation requirements. Practical application of these Stream Procedures and feedback from stakeholders is expected to result in increased predictability and decreased subjectivity in subsequent versions.

Activities not regulated by the Corps have no Corps permit requirements and therefore no compensatory mitigation requirements. Projects eligible for authorization under Nationwide Permit 27 (Aquatic Habitat Restoration, Enhancement, and Establishment Activities) must result in increases in aquatic resource functions and therefore will have no compensatory mitigation requirements. The Corps will generally not require compensatory mitigation for projects related to bioengineering of stream banks for erosion control or maintenance activities, such as maintenance dredging.

When compensatory stream mitigation is required, the three options to accomplish compensatory mitigation include mitigation banks, in-lieu fee programs and permittee-responsible mitigation. Those options are outlined in 33 CFR 332 and discussed in Section 4 of this document. Applicants will use either the Debit Calculator, MNSQT or WISQT (once available) to calculate the amount of compensatory stream mitigation necessary to offset the loss of stream functions.

2.3 THE DEBIT CALCULATOR

The Debit Calculator is a companion document to the MNSQT and provides a rapid and streamlined evaluation of stream impacts by combining information from individual project design documents, models, related literature, and professional experience to determine debit (mitigation) needs. Permit applicants can use the Debit Calculator to calculate mitigation needs **if the Corps has determined that mitigation is required to offset the stream function losses associated with a project.**

The Debit Calculator:

- Is a detailed Excel spreadsheet-based calculator;
- Provides applicants with options for calculating mitigation needs considering the level of effort, time and cost expended; and
- Results in a negative functional foot change number, which is equivalent to mitigation credits required.

The Debit Calculator contains a Debit Tool Table within the Excel workbook that calculates the functional loss based on the existing stream length, existing condition of a stream, and the

Impact Severity Tier of a proposed activity. The functional loss is quantified in the form of functional feet (FF) and represents the debits needed to satisfy a mitigation requirement. Applicants can find additional information on the Debit Tool Table in the *Minnesota Stream Quantification Tool and Debit Calculator User Manual* (MNSQT Steering Committee, 2020).

An applicant has three different debit options to choose from for calculating functional loss within the Debit Tool Table. A summary of the debit options is below (Table 2). Each option requires a different level of effort, cost, and time. Applicants should not modify the conditions and options in the Debit Tool for individual projects.

Table 2. Summary of Debit Options

Debit Option	Existing Condition Score (ECS)*	Proposed Condition Score (PCS)
1	Assess existing condition using Existing Conditions worksheet for required parameters	Estimate proposed condition using Proposed Conditions worksheet for required parameters
2	Assess existing condition using Existing Conditions worksheet for selected parameters and use standard scores for all other parameters	Use Debit Calculator
3	Assess existing condition using Existing Conditions worksheet using standard scores for all parameters (0.90 for state listed outstanding resource waters (prohibited or restricted) and 0.80 for other waters as a default value)	Use Debit Calculator

** ECS cannot be below 0.30 for any of the options.*

Debit Option #1 involves the most effort and requires the applicant to assess the existing condition and estimate the proposed condition scores for all required parameters within the Debit Calculator workbook. Required parameters are outlined in Section 2.3 of the *Minnesota Stream Quantification Tool and Debit Calculator User Manual* (MNSQT Steering Committee, 2020). Users collect field data and enter field values into the Existing Conditions worksheet to calculate an existing condition score for a designated project reach(es). The user also enters estimated field values into the Proposed Conditions worksheet that describe the physical post-project condition, based on design reports, calculations, and drawings. Unlike the MNSQT, the applicant would not conduct follow up monitoring for the Proposed Condition in the Debit Calculator. Once the user enters the field values within the Proposed Conditions worksheet, the Debit Tool Table populates the Proposed Condition Score and calculates the functional feet of loss. Therefore, an experienced stream practitioner who understands fluvial geomorphology, stream restoration science and application, and biology is critical to accurately predict field values associated with the functional loss calculation. Typically, users will exercise this option when they have the expertise and resources to collect field data for the existing condition and when they anticipate that the parameters would score less than the standard score of 0.8 used in Debit Options #2 and #3.

Debit Option #2 allows the applicant to collect field data for selected parameters to assess the existing condition and does not require the user to estimate the proposed condition score. For this option, the applicant should coordinate early with the Corps and state regulatory agencies to determine the selected parameters to assess. For parameters not selected, the applicant will apply an assumed standard score of 0.8 (or 0.9 for state listed outstanding resource waters) for the existing condition score (ECS). The Debit Calculator estimates the proposed condition score, based on the length and impact severity tiers discussed below, and calculates the functional loss. Typically, users will exercise this option when they have the resources to collect field data for certain parameters of the existing condition and when they anticipate that those parameters would score less than the standard score of 0.8.

Debit Option #3 provides the least amount of time and effort for the applicant, as a standard score of 0.8 (or 0.9 for state listed outstanding resource waters) is used for all parameters to assess the existing condition score. The Debit Calculator estimates the proposed condition score and functional loss based on the length and impact severity tier(s). Debit options #2 and 3 include an allowable bottom limit of 0.3 for all parameters within the ECS. Typically, users will exercise this option when they do not have the resources or interest in collecting field data for the existing condition or when they anticipate the parameters would have a standard score of 0.8.

3 DETERMINATION OF FUNCTIONAL LIFT (CREDITS)

3.1 MINNESOTA STREAM QUANTIFICATION TOOL

The SQT consolidates well-defined procedures for objective and quantitative measures of defined stream variables, to produce an approach for functional lift crediting and loss-based debiting. Sponsors with compensatory mitigation proposals (mitigation banks, in-lieu fee mitigation sites, and permittee responsible mitigation sites) seeking stream credit must utilize the MNSQT to quantify the amount of functional lift.

The SQT is an application of the Stream Functions Pyramid Framework (Harman et al., 2012) and uses function-based parameters and metrics to assess five functional categories: hydrology, hydraulics, geomorphology, physicochemical, and biology. The SQT integrates multiple indicators from these functional categories into a reach-based condition score that is used to calculate the change in condition before and after impacts or restoration activities are implemented.

The MNSQT was optimized as a reach-scale tool for use on wadeable, single-thread channels and is one of several Stream Quantification Tools that have been developed for use in other states across the country. The MNSQT Steering and Technical Committees were comprised of representatives from state and federal agencies, who collaborated to regionalize the tool using data specific to watersheds and conditions in Minnesota. The Committees established reference curves within the tool to relate field values for each metric to a regional reference condition. The SQT uses reference curves to assign an index value related to functional capacity, i.e., functioning, functioning-at-risk, and not functioning condition.

The MNSQT:

- Is a detailed Excel spreadsheet-based calculator;
- Identifies standard data collection needs for prospective stream impact and mitigation sites;
- Provides objective, science-based, and regionally-developed quantitative measures of defined stream variables;
- Is required for use in determining functional lift (credit) on compensatory mitigation sites; and
- Informs determinations on the functional loss and gains of stream impacts and stream restorations.

3.2 LIMITATIONS OF THE MNSQT

The MNSQT was developed as a reach-scale, point-in time tool with reference curves that were primarily derived from data within perennial, wadeable, single-thread channel streams. Therefore, the MNSQT has limited capability to model other flow regimes and multi-thread (anastomosed) stream/wetland complexes. Section 2.3 of the *Minnesota Stream Quantification Tool and Debit Calculator User Manual* (MNSQT Steering Committee, 2019) addresses the applicability of the MNSQT parameters for use on intermittent, ephemeral, and anastomosed stream/wetland complexes. The manual does not include guidance on use of the MNSQT for larger rivers but use of some function-based parameters and reference curves may be applicable. The Corps encourages applicants to coordinate before using the MNSQT on larger rivers. Applicants should not modify parameters and reference curves in the MNSQT for specific projects. If applicants are interested in using any different method other than the SQT to measure stream functional lift or loss, they should coordinate that with the Corps for approval prior to use.

In addition, the MNSQT does not automatically evaluate secondary or indirect impacts in reaches upstream or downstream of the restoration activity. For example, removal of dams or other structures may have beneficial effects beyond the footprint of the direct restoration activities. Project proponents who are proposing this type of restoration activity are encouraged to reference the MN Dam Memo (Appendix B). Stream Mechanics, the U.S. EPA, and the Corps developed this to guide users through scoring impoundments and upstream reaches in the MNSQT.

3.3 FUNCTIONAL LIFT (CREDITS)

An experienced stream practitioner who understands fluvial geomorphology, stream restoration science and application, and biology is required to utilize the MNSQT to assess expected stream credits, as the tool integrates multiple stream-specific metrics and peer-reviewed field methodologies. Prior to impacts or restoration work, users collect field data for select metrics and enter field values into the MNSQT worksheet to calculate an existing condition score for a designated project reach(es). The user also enters proposed field values that describe the physical post-project condition, based on design studies, calculations, drawings, and best

available science, and the MNSQT calculates an overall proposed condition score. The stream practitioner would develop quantifiable objectives, performance standards, and monitoring plans that link restoration activities to measurable changes in stream function.

The MNSQT calculates change in units of functional feet (FF) using stream length and the existing and proposed reach condition scores (ECS and PCS respectively) as follows:

1. $Existing\ FF = ECS * Existing\ Stream\ Length$
2. $Proposed\ FF = PCS * Proposed\ Stream\ Length$
3. Change in FF $(\Delta FF) = Proposed\ FF - Existing\ FF$

The MNSQT multiplies existing and proposed condition scores by stream length to calculate the change in functional feet (ΔFF). The project would generate functional lift when the existing condition is more functionally impaired than the proposed condition, yielding a positive value (credit) in the third equation. A negative value would represent a functional loss. The MNSQT calculates functional feet of stream credits based on the proposed condition score; therefore, a user is required to score the as-built condition and conduct follow-up monitoring on the restored reach to ensure the appropriate amount of stream credits have been established.

The Corps will rely on the MNSQT to measure the stream functional lift (credits) of stream restoration projects and the Debit Calculator to assess the functional loss (debits) resulting from stream impacts. Use of the same quantitative methodology to calculate functional lift and loss (debits and credits) will ensure impacts to water resource functions are sufficiently offset by compensatory mitigation. Applicants and stream restoration practitioners can find instruction on how to utilize the MNSQT and Debit Calculator workbooks, as well field collection methods and field forms, in the *Minnesota Stream Quantification Tool and Debit Calculator User Manual* (MNSQT Steering Committee, 2019).

3.4 APPLICATION IN WISCONSIN VERSUS MINNESOTA

Agencies regionalized the MNSQT and Debit Calculator using stream data specific to watersheds and conditions in Minnesota. Agencies are currently working to regionalize the SQT and Debit Calculator for Wisconsin in 2023. Until Wisconsin-specific tools are developed, users may utilize partial or complete application of the MNSQT and Debit Calculator for projects in Wisconsin. Before proposing the use of the MNSQT or an alternative tool in Wisconsin, users should meet with a Corps project manager to discuss if and how they can use the tool for their specific project.

4 STREAM COMPENSATORY MITIGATION PROCESS AND SITE DEVELOPMENT

4.1 MITIGATION OPTIONS

The Corps will determine what compensatory mitigation is required based upon what is available, practicable, and capable of compensating for the stream functions lost as a result of an activity authorized by a Department of the Army (DA) permit. Compensatory mitigation requirements must be commensurate with the amount and type of impact associated with the authorized activity (33 CFR 332.3 (a)). There are three types of compensatory mitigation options potentially available to an applicant (permittee):

1. Mitigation Bank: A Corps approved site, or suite of sites, where aquatic resources have been restored and preserved in advance of impacts authorized by DA permits. A permittee may elect to purchase credits from an established, Corps approved mitigation bank when impacts are within the banks service area (BSA) and the bank has appropriate stream credits available. The bank accepts full responsibility for providing the aquatic resource restoration and preservation on behalf of the permittee.
2. In-Lieu Fee Program (ILF) Credits: An approved ILF program involves the restoration and preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements for DA permits. A permittee may elect to purchase credits from an established, Corps approved, ILF with available advance or released credits within the BSA. The ILF program accepts full responsibility for providing the aquatic resource restoration and preservation on behalf of the permittee.
3. Permittee-Responsible Mitigation (PRM): The permittee, or an authorized agent or contractor of the permittee, retains full responsibility to provide aquatic resources restoration and preservation compensation. PRM compensation is approved as part of the DA permit and may be provided on-site or off-site in relation to the permitted impact area.

4.2 PREFERENCE HIERARCHY

33 CFR 332 specifies that when evaluating options for compensatory mitigation, the Corps must consider what is environmentally preferable. The use of mitigation banks can reduce risk and uncertainty, as well as temporal losses of aquatic functions. Therefore, the preferential sequence for identifying ecologically suitable compensatory mitigation sites is:

1. Mitigation banking credits;
2. In-lieu fee credits;
3. Permittee-responsible mitigation.

In addition to the site preference hierarchy, the Corps will also consider the following factors when considering compensatory mitigation requirements; in-kind, in-place and in-advance.

Compensatory mitigation that is in-kind, in-place and in-advance has the greatest likelihood of replacing stream functions lost due to authorized projects.

1. In-kind: The Federal Mitigation Rule defines "in-kind" compensation as a resource of a similar structural and functional type to the impacted resource (33 CFR 332.2). In general, in-kind compensation is preferable to out-of-kind compensation because it is most likely to compensate for the functions lost at the impact site (33 CFR 332.3(e). For the purposes of this Stream Procedures document, in-kind compensation for a wadeable stream impact would involve restoration and preservation of a wadeable stream resource though one of the three options discussed in Section 4.1. At this time, the Corps has determined that no further classification breakdown of these streams into additional types is required for this purpose due to the use of the MNSQT, which equilibrates and measures stream functionality across the diverse suite of wadeable stream resources that exist. The Corps considers proposals to provide mitigation for wadeable stream impacts via resources of a different structural and functional type (i.e., wetlands, lacustrine resources, etc.) as out-of-kind. This type of compensation is generally not preferred. The Corps may approve out-of-kind compensation in instances when the applicant has demonstrated that out-of-kind compensation is environmentally preferable from a watershed perspective.

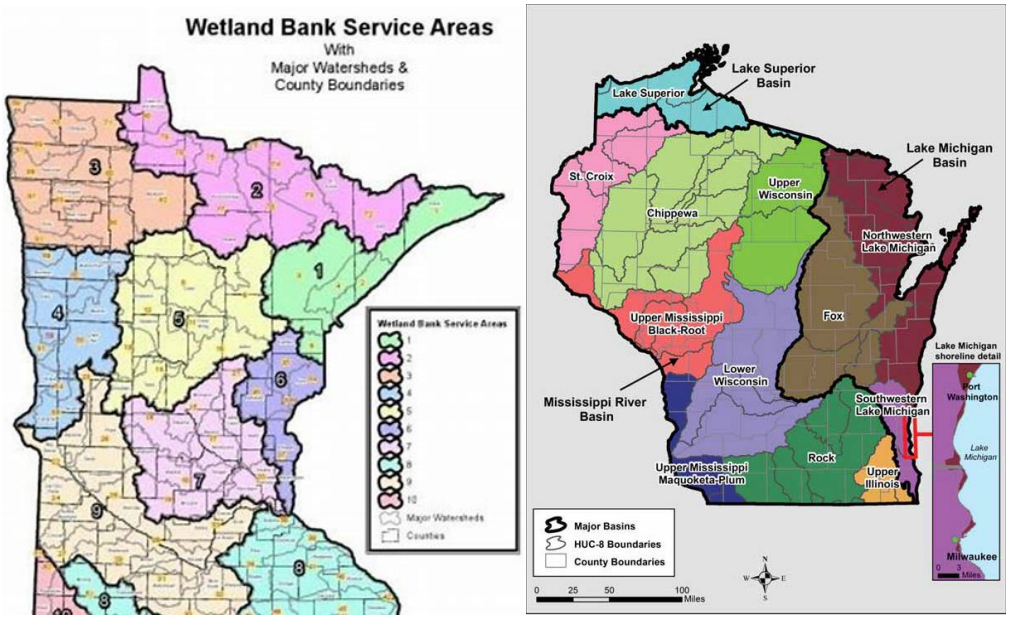
2. In-place: A guiding principle of the Federal Mitigation Rule is the watershed approach to compensatory mitigation (33 CFR 332.3). A watershed approach considers the importance of landscape position and resource type of compensatory mitigation projects for the sustainability of aquatic resource function within the watershed. The goal is to replace lost stream functions as close as possible within the same bank service area (BSA) as that of the impact site, and in a similar landscape setting. As shown in Figure 1, the Corps utilizes ten BSAs in Minnesota and twelve in Wisconsin, based on modified 6-digit hydrologic unit code (HUC) watersheds. For the purpose of this document, watershed and BSA are typically used interchangeably when identifying credits based on a watershed approach. Due to the importance of maintaining stream functions within the watershed, mitigation proposed in a different BSA than the impact is often not consistent with a watershed approach and generally not appropriate.

3. In-advance: A mitigation bank is approved and constructed in almost all instances prior to use of credits at that bank to offset the loss of waters at an impact site. If an applicant cannot propose in-advance credits to offset the functional loss of streams at their impact site, the Corps may require additional compensation to offset this temporal loss.

When evaluating compensatory mitigation options and determining appropriate compensation for a particular project under the preference hierarchy, the Corps must consider whether the proposal, as well as any available alternative compensatory mitigation options, is practicable (available and capable of being done considering cost, logistics and existing technology). For example, cost alone cannot be the reason an ecologically suitable mitigation option, such as an approved mitigation bank with available and sufficient stream credits, is rejected in favor of the development of a PRM site. However, the selection and development of an ecologically suitable PRM site may be bolstered by the reduced cost to the permittee when the property on which the PRM would be sited is already under permittee ownership. Likewise, when considering multiple

mitigation options, cost may be one factor considered by the Corps in determining whether to condition a permit requiring the purchase of mitigation bank credits from one approved mitigation bank over another.

Figure 1. Bank Service Areas in Minnesota and Wisconsin



4.3 DEVELOPMENT OF COMPENSATION SITES

Stream restoration for the purposes of compensatory mitigation is the manipulation of the physical, chemical, and biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource, with consideration for site and watershed constraints. With the use of the MNSQT functional lift calculation, there is no need to further characterize the resulting credits by specific compensation types (re-establishment, rehabilitation, enhancement) identified in 33 CFR 332.

Streams are dynamic systems in continual movement over time. Much of the watersheds throughout Minnesota and Wisconsin have changed dramatically, making restoration to pre-settlement conditions impracticable in some cases. Restoration activities involving some level of stream relocation may be appropriate as mitigation, typically when a stream is still being restored to return the stream to some historic natural corridor or within some reasonable distance of the previous stream corridor, within the historical floodplain, and within the stream valley. Restoration of natural stream systems is generally preferred. However, long-term substantial modifications to natural watershed drainage patterns may mean it is not always possible or appropriate to rely on natural stream history. In some cases, there may be opportunities to provide meaningful functional lift in these severely altered settings, even when it is impracticable to restore the resource to pre-settlement conditions. The Corps encourages the use of stable,

preferably non-impacted reference quality stream reaches for designing the appropriate pattern, profile, and dimension for stream mitigation projects.

Not all stream restoration or conservation projects are appropriate or approvable as mitigation for the purpose of offsetting stream losses elsewhere. For example, the Corps generally discourages projects that involve the generation of a minimal amount of stream credit, unless there is potential to restore other aquatic resources on the site. When possible and appropriate, project proponents should submit mitigation proposals to include both stream and wetland restoration work.

4.4 SITE REVIEW PROCESS

4.4.1 Site Selection

Project proponents must select an appropriate site, as this is the first crucial step in the development of any compensatory mitigation project. In some cases, a location near the proposed regulated activity (i.e., "on-site") may serve as the location for mitigation, but in most cases, it is likely that an applicant will need to select a site for mitigation that is separated from the impact site.

The Corps has developed a Site Selection Criteria Checklist (Appendix C) to assist practitioners when evaluating potential sites and determining appropriate mitigation sites. The Corps encourages sponsors to complete this checklist during the prospectus stage for all bank or ILF stream mitigation projects, and during development of the mitigation plan for PRM proposals. The Corps will review the completed checklist when making decisions on whether a mitigation site has potential.

The checklist is divided into three sections. The first includes minimum requirements for appropriate site selection, reach development, etc. The Corps generally considers factors in this section as necessary for site approval, as they indicate an avoidance of fatal flaws. The second and third sections include additional site selection criteria that lend merit to a project, generally improving the likelihood of approval. These criteria are not all necessarily equivalent. For some sites, the presence or absence of certain criteria will carry greater weight based on the reach location, extent, stressors in the watershed, needs of the watershed, ability of the sponsor to protect the site, etc. The Corps encourages project proponents to identify all site selection criteria that apply and provide documentation to demonstrate how and to what extent each has been met.

The MNSQT includes a Catchment Assessment worksheet that a sponsor completes to help determine site factors that may limit the potential lift of a stream restoration project. As with the Site Selection Criteria Checklist, the Corps encourages sponsors to complete this worksheet early in the review for all stream mitigation projects. Completion of this worksheet will provide insight into whether the watershed is large enough and whether the sponsor is siting the project within the watershed such that the mitigation project will be self-sustaining and stable.

The Corps recognizes that some factors in the Catchment Assessment are largely outside the project proponent's direct control; however, stressors may be present in the catchment that may limit long-term success for the project reach. Sponsors should provide additional documentation

on sites that score "poor" in the Catchment Assessment, and then demonstrate whether and how they may overcome these stressors during project design and construction. Sponsors may use this information to develop project goals that match the restoration potential of a site. The Corps considers this information to be crucial when evaluating restoration potential.

Corps approval of a compensatory mitigation project will depend substantially on the site's position within the watershed, adjacent land uses, and the condition of the larger watershed. In some cases, the Corps may determine that proposed stream restoration activities are not appropriate to generate credit because of upstream, downstream or watershed conditions. For example, if a project proponent proposes to restore 500 feet of channelized stream within their property, but beyond their property that stream is bounded up and downstream by other sections of channelized stream, the Corps may determine that segment of restoration will not be sustainable on its own.

Another consideration in determining appropriate site selection is each reach's restoration potential and functional lift over baseline. The mitigation rule generally establishes that mitigation projects should be high quality. However, this does not mean that reaches must score at 0.8 or higher. For example, the Corps may view mitigation projects that lift urban reaches from non-functioning scores to moderate scores as high restoration potential, and grant credit for this lift. Conversely, the Corps may view a project with high quality reach(es) and little or no functional lift as unable to generate credit. The Corps will consider exceptions to this general guideline, for example to include projects that include the preservation of a network of headwater tributaries within a watershed or preservation of tributaries under high threat of disturbance.

4.4.2 **Minimum Requirements for Stream Mitigation Site Development**

33 CFR 332 outlines several other minimum requirements and standards for compensatory mitigation, and project proponents should make themselves familiar with these standards prior to engaging in the review process for compensation sites. The Corps has outlined, throughout these Stream Procedures, a variety of requirements, expectations, and regional interpretations for implementation within Minnesota and Wisconsin.

A mitigation sponsor or project proponent should focus restoration goals at a mitigation site on returning natural/historic functions to a former or degraded aquatic resource through the manipulation of physical, chemical, and biological characteristics of a site. The sponsor should develop site goals with consideration for current site and watershed constraints, such as water withdrawals, altered precipitation-runoff relationships or land use that constrain overall restoration potential.

Mitigation sponsors should not "over" design stream restoration projects, that is, develop excessive sinuosity or over-meander stream segments to generate more stream mitigation credit. The Corps will not approve or offer credit for "over" designing a stream reach, particularly by proposing a longer or more meandered channel beyond the appropriate historical or reasonably achievable or sustainable condition given watershed conditions or stressors.

The Corps will consider preservation, typically in combination with other restoration components, provided the proposal meets the minimum eligibility criteria outlined below and the requirements of these procedures.

To be eligible for preservation, project proponents must demonstrate that the channel and the minimum effective riparian area meets the following requirements from 33 CFR 332.3(h):

- Each reach to be preserved must provide important physical, chemical, or biological functions to the watershed as well as to the connecting reaches to be restored.
- Each reach to be preserved must contribute significantly to the ecological sustainability of the watershed as well as to the connecting reaches to be restored.
- The Corps must determine that preservation of each reach is appropriate and practicable.
- Each reach to be preserved must be under threat of destruction of adverse modification.
- Each reach to be preserved must be permanently protected through an appropriate site protection instrument.

4.4.3 **Sites involving both stream and wetland credits**

In Minnesota and Wisconsin, stream mitigation projects often involve sites that historically contained both wetlands and streams, with wetlands often occurring in a stream's floodplain. As a result, sponsors should consider restoration and preservation of wetlands in the stream's riparian corridor in addition to in-channel work.

In systems involving both streams and wetlands, the Corps strongly encourages a combination of stream and wetland restoration work. Restoring different aquatic resources on a site can result in synergistic functional improvements, due to the strong link between the functional integrity of the stream and the condition of the surrounding watershed and floodplain. In these cases, proposed sites would involve the generation of both wetland and stream credit and some of the wetland restoration may be within the effective riparian area (ERA). As defined within the MNSQT user manual, the ERA is the area adjacent to and contiguous with the stream channel that supports the geomorphological dynamic equilibrium of the stream.

The ERA includes several SQT metrics that may be influenced by proposed work related to wetland restoration. Enhancement or establishment of native/noninvasive wetland vegetation in the ERA does not influence or contribute to the vegetative metrics considered in the SQT, but hydrologic wetland improvement can contribute to stream functional lift in the SQT. As such, the Corps will apply the following when evaluating proposals seeking both wetland and stream credit within the ERA.

1. Sponsors proposing wetland credit areas within the ERA *only* involving the enhancement/establishment of native/noninvasive wetland vegetation can propose the same amount of wetland credit as that proposed for wetland vegetation enhancement areas outside the ERA.

2. Sponsors proposing wetland credit areas within the ERA involving *both* vegetative and hydrologic lift can propose half the amount of wetland credit as that proposed for vegetative and hydrologic lift outside the ERA.
3. Sponsors cannot receive buffer credit within the ERA.

4.4.4 **Monitoring, Performance Standards and Credit Releases**

The Corps will typically require annual monitoring for a minimum of 5 full growing seasons post-construction for every compensatory mitigation project. In some cases, a longer monitoring period may be necessary, for example a typical performance standard is specific to bankfull events and ability to document multiple bankfull events may be influenced by variability of weather patterns. The Corps may require a monitoring period up to 10 years or more, depending on the complexity and risk associated with the restoration work, aquatic resource to be restored, or the proposed restoration goals. For stream mitigation projects, the Corps will require the sponsor to monitor each stream reach by completing the MNSQT. Sponsors should propose performance standards and credit release schedules that are based on the progression towards achieving the proposed condition score within the MNSQT, as well as other site-specific factors, such as development of planned plant communities or recolonization by threatened or endangered species. The MNSQT includes a Data Summary worksheet to track monitoring data and features a function-based parameters summary table and a functional category report card. When deemed appropriate, the Corps may consider additional credit for achieving a final condition score greater than proposed as part of the final monitoring report and final credit release.

The sponsor must complete monitoring for all function-based parameters and metrics used to calculate the existing and proposed condition scores. Therefore, if a project sponsor is seeking credit for the functional lift associated with proposed activities to improve physiochemical or biological stream functions, the Corps will require monitoring of the function-based parameters associated with the physicochemical and biology functional categories. The Corps may require additional monitoring and performance standards depending on site-specific considerations, watershed and adjacent properties stressors, and channel design. For example, the Corps will require additional performance standards for invasive species management within the effective vegetated riparian area to ensure holistic site performance and sustainability.

4.4.5 **Financial Assurance**

Sponsors for all compensatory mitigation sites involving stream improvements for credit or dependent upon stream improvements for success must provide financial assurances. Financial assurances must be sufficient to fund reach reconstruction (on-site corrections or reconstruction) and maintenance. For high-risk sites, the Corps may also require financial assurances for replacement (identification of and development of a new site elsewhere) in the event of restoration failure. Sponsors may provide this funding through a number of appropriate mechanisms. Project proponents should reference *Implementing Financial Assurance for Mitigation Project Success* white paper (Scodari et al., 2011) for details on the variety of options by type of project proponent.

4.4.6 **Long Term Management Plan and Funding**

Sponsors for all compensatory mitigation sites involving stream improvements for credit or dependent upon stream improvements for success must provide long-term management funding. Sponsors can provide this funding through a number of appropriate mechanisms. Project proponents should reference *Implementing Financial Assurance for Mitigation Project Success* white paper (Scodari et al., 2011) for details on the variety of options by type of project proponent.

Long-term management funds must be sufficient to cover the cost of anticipated maintenance required to maintain the final proposed condition score, conduct any necessary monitoring, and conduct any anticipated management activities after the monitoring period has ended. The long-term management plan section of the mitigation plan must include a list of anticipated activities, budgets for each, and frequency of need for each activity, as well as provide for contingency funds. One tool available to project proponents when developing long-term management plans is The Nature Conservancy's Long Term Stewardship Calculator.

The sponsor must use these costs to develop a plan and mechanism for ensuring they can fund these activities as needed in the long-term. The long-term management fund must be fully funded and in place prior to the final release of credits, typically requiring a percent of the long-term management fund to be funded with each credit release. Long-term management funding mechanisms must identify an appropriate responsible party for completing any necessary activities identified by the Corps and must include generation of interest to ensure sufficient funding into the long-term.

4.4.7 **Site Protection**

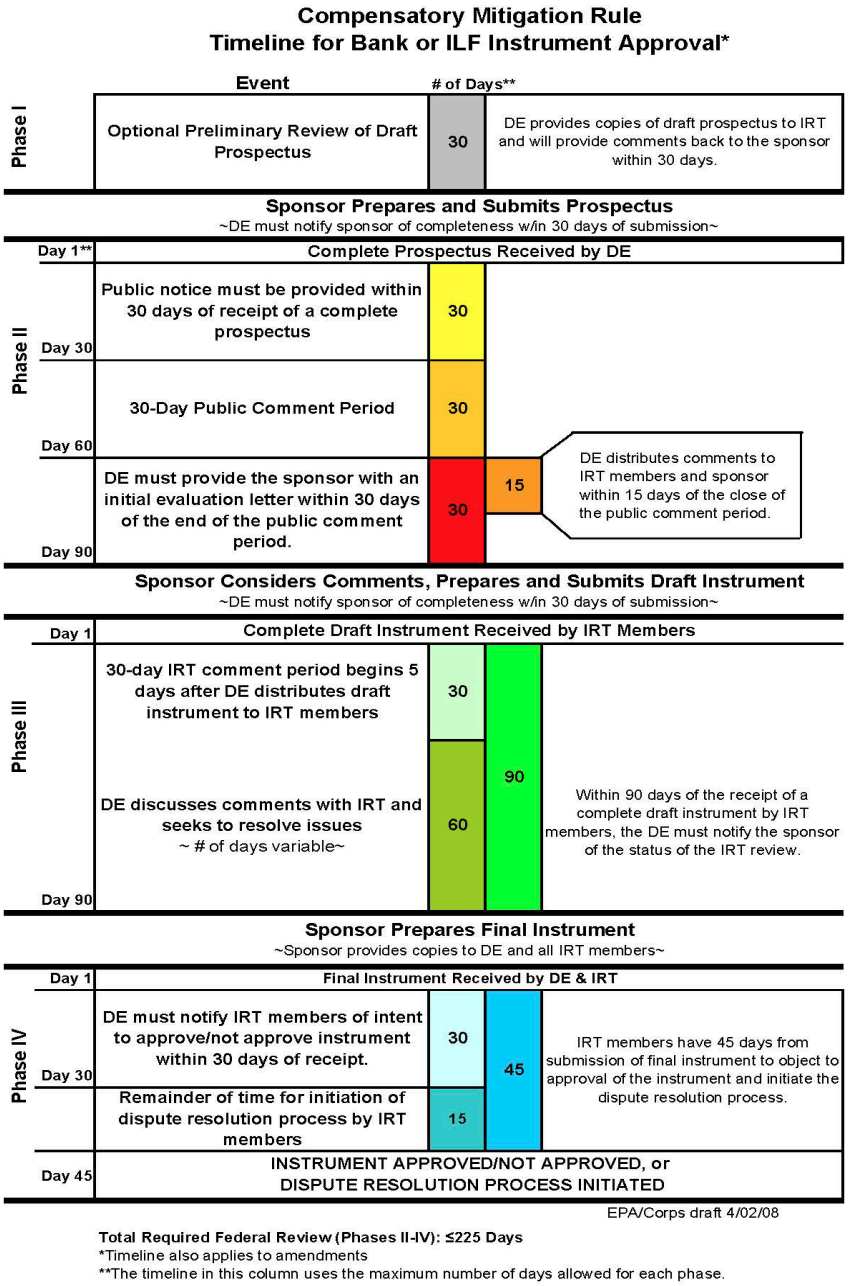
As required by 33 CFR 332, all mitigation shall include a permanent (no sunset or expiration timeline), recorded, site protection instrument over the mitigation site. This instrument is generally a conservation easement held by a governmental entity or a natural resource conservation based non-profit. A complete mitigation plan must identify the proposed conservation easement holder and a copy of the draft conservation easement for Corps review.

All conservation easements must grant, at a minimum, the following rights to the Corps: reasonable access, 60-day notification and Corps approval of proposed modifications to the conservation easement, and enforcement of the conservation easement. Proposed conservation easements must clearly reference the Corps approved mitigation plan as the guiding document for determining appropriate use. To be acceptable, the conservation easement must include both the entire length of stream reach(es) proposed as part of the mitigation site as well as the effective riparian area, as this area is a critical component of a successful stream mitigation site. If a conservation easement cannot cover the entire effective riparian area, the Corps may require a reduction of stream credit. In some cases, for a conservation easement to be acceptable and to ensure the effective riparian area is adequately buffered from current or potential future incompatible land use, the sponsor may need to include a buffer beyond the effective riparian area.

4.4.8 **Bank and ILF Review Process**

Sponsors may find the review process for mitigation bank and in-lieu fee programs at 33 CFR 332.8. Figure 2 provides an overview of major steps and anticipated timelines, and sponsors should review and consider additional details and considerations provided in the entire Federal Mitigation Rule.

Figure 2. Timeline for Bank or ILF Instrument Approval



Please note that this timeline does not include multiple Mitigation Plan revisions or discussions with the IRT that may need to occur between phases. The time periods outlined in this figure only capture Corps and IRT review timelines, and do not capture the time needed for the sponsor to identify an appropriate site, gather the necessary field data considering seasonal constraints, address Corps comments, or develop individual submittal documents, which the sponsor should also consider for planning purposes. The Corps identifies IRT members on a site-by-site basis and agency participation on the IRT is voluntary.

To assist mitigation proponents, the Corps has developed checklists outlining components of a Complete Prospectus (Appendix D) and Mitigation Plan (Appendix E). The checklists identify specific components of the MNSQT, including the Catchment Assessment and Project Assessment Worksheets, that the sponsor should submit at each phase or step of the timeline.

4.4.9 **Permittee Responsible and 3rd Party Compensation Sites**

One underlying purpose of Federal Mitigation Rule is to make equivalent the standards for mitigation between permittee-responsible mitigation (PRM) and 3rd party compensation sites (bank and in-lieu fee programs). The Federal Mitigation Rule mandates equivalent information requirements, performance standards, site protection mechanism, and all other standards for all forms of mitigation. The MNSQT allows the Corps to ensure that these equivalency standards can be met for stream mitigation, by providing a standardized methodology for measuring functional lift at both 3rd party mitigation sites as well as PRM sites.

However, the selection of and size of PRM sites may not always be equivalent to that of banks as PRM sites are identified and selected specifically based on their ability to offset a particular authorized loss. The MNSQT specifically allows for more reliable, accurate and repeatable mitigation need determinations for PRM sites to ensure adequate offset of losses.

The primary difference between the review and approval of PRM and 3rd party compensation sites outlined by the Federal Mitigation Rule is the approval mechanism. 3rd party mitigation sites must go through the review process outlined in 33 CFR 332.8, resulting in a final Instrument, which includes a Mitigation Plan, signed by both the Corps and bank or in-lieu fee program (ILF) sponsor. The operation and use of a mitigation bank are governed by the Instrument. The Instrument provides a legal mechanism by which the bank or in-lieu fee program sells credits to permittees, whose obligation to provide compensatory mitigation is then transferred to the 3rd party mitigation sponsor. Approval of PRM sites is completed pursuant to permit conditions that include a mitigation plan (equivalent to the mitigation plan required as part of a draft Instrument). That mitigation plan must demonstrate that the PRM site adequately offsets the losses to be authorized as part of the Corps permit.

Unlike banks and in-lieu fee programs, PRM sites do not generate credits beyond those determined by the Corps as necessary to offset the authorized loss. This means that should a PRM site result in a longer channel or higher MNSQT score than proposed or anticipated, the permittee cannot hold or "bank" that lift for future use (or for sale). In that event, the permittee has provided mitigation beyond what was required, but that lift cannot be tracked and used for other projects. As authorization of the PRM site is tied to a particular permit authorization and does not result in an approved Instrument obtained through the mitigation bank review process,

the permittee does not have a mechanism through which to accept the compensatory mitigation obligation from other permittees or for projects other than the one authorized.

5 SUMMARY

The Corps developed these Stream Procedures to ensure consistent science-based decision making for activities on streams regulated under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. The implementation of the SQT and Debit Calculator have been instrumental in providing a consistent, efficient, and repeatable approach to assess functional loss at stream impacts sites and functional lift at stream restoration sites. The Corps will refine and update the SQT, Debit Calculator, and Stream Procedures document as needed over time based on feedback and lessons learned through implementation.

You may send general questions regarding the content of these Stream Procedures to: stpaulsqt@usace.army.mil

6 REFERENCES

Compensatory Mitigation for Losses of Aquatic Resources, 33 CFR 332 (2008).

Clean Water Act Section 404(b)(1) Guidelines, 40 CFR 230 (2010).

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7 APPENDICES

Appendix A: Description of Stream Features Worksheet and Instructions

Appendix B: MN Dam Memo

Appendix C: Site Selection Criteria Checklist

Appendix D: Completeness Checklist for Prospectus

Appendix E: Completeness Checklist for Mitigation Plan

Appendix A: Description of Stream Features Worksheet and Instructions

Description of Stream Features Worksheet

The Corps encourages applicants to complete this worksheet to aid in the identification of streams within a project area. Provide representative photographs of the stream features outlined in this form in a separate attached document.

Project ID Number: _____ **Latitude (DD):** _____

Feature ID: _____ **Longitude (DD):** _____

Waterbody Name*: _____ **Length of Reach (ft):** _____

Investigator (s): _____ **Top of Bank Width (ft):** _____

Inspection Date: _____ **OHWM Elevation:** _____

County/State: _____ **Special Designations:** _____

Site Description and Site History*:

_____

Associated Wetland(s)? *If yes, provide a brief description below and attach figures of locations*

_____

*Include Historic Aerial photographs and Topographic Maps (historic and current) of stream when appropriate (see instructions).

Water Regime (check all that apply):

☐ **Perennial** ☐ **Intermittent** ☐ **Ephemeral**

Explain Reasoning *(attach all supporting data):*

Other Evidence: *List/describe an additional field evidence and/or lines of reasoning used to support your delineation*

Ordinary High Water Mark (OHWM) Criteria:

*Check all that apply and provide representative photographs** of each checked criteria in an attachment.*

☐ Clear, natural line impressed on bank
☐ Vegetation matted down, bent or absent
☐ Leaf litter disturbed or washed away
☐ Abrupt change in plant community
☐ Destruction of terrestrial vegetation
☐ Changes in soil characteristics
☐ Sediment deposition
☐ Sediment sorting
☐ Presence of litter or debris
☐ Shelving
☐ Evidence of scouring
☐ Water staining on leaf debris/tree trunks

List of Photo ID Numbers:

Unique Features:

Check all that apply and provide representative photographs of each checked criteria in an attachment.

☐ Unstable Banks
☐ Rock Outcrop
☐ Riffles/Runs
☐ Bridge/culvert
☐ Steep Sideslopes
☐ Headcutting
☐ Gravel Bars/Islands
☐ Riprap
☐ Diversion/Intake
☐ Buildings
☐ Erosion
☐ Channelization
☐ Seeps
☐ Dams
☐ Pools
☐ Large Woody Debris
☐ Concentrated Flow Points (e.g. Tile)
☐ Aquatic fauna (macroinvertebrates, fish etc.)
☐ Submergent Aquatic Vegetation
☐ Undercut Banks

List of Photo ID Numbers:

Bed Material Characterization:

Estimate percentages to describe the general sediment texture of the channel, provide representative photographs when conditions allow.

	Clay/Silt <0.05mm	Sand 0.05- 2mm	Gravel 2mm- 1cm	Cobbles 1-10cm	Boulders >10cm
Bed Material					

Notes/Description and Photo ID Numbers:

Vegetation:

Check boxes of the strata that are present in the reach and provide a brief description of the general vegetation characteristics. List the dominant species of each strata and describe which strata is dominant. Provide representative photographs of vegetation, including riparian buffer.

☐ **Tree** ☐**Shrub** ☐ **Herbaceous** ☐**Bare**

Notes/Description and Photo ID Numbers:

Riparian Area Width:

Provide a general estimate in feet of the width of the riparian corridor that currently contains riparian vegetation and is free from any soil-disturbing land uses (MNSQT, 2019).

Notes/Description and Photo ID Numbers:

Notes:

Provide any additional information below, all photographs and maps should be provided in an attached appendix.

Description of Stream Features Instructions

The Corps encourages applicants to use this instruction sheet to correctly fill out the "Description of Stream Features Worksheet." This is designed to aid in the identification of streams within a project area. For questions on this worksheet, please contact St. Paul Regulatory Stream Team at StPaulSQT@usace.army.mil

How to Use: Fill out one worksheet for each tributary, or if there is significant variation in characteristics within the segment of the proposed impact then fill out a single worksheet per reach. Additional worksheets will be required if there is drastic erosion in parts of the stream channel, or if the proposed impact will affect another stream reach. Attach all photographs and maps in an Appendix to the worksheet.

Photos: Photos should include the following

- Location of each photo point (see instructions for providing maps)
- Label photos with what they are representative of (e.g. large woody debris)
- Photo points should match the observation point, a single photo can serve to demonstrate multiple features.
- Label the photo with the cardinal direction it was taken in (e.g. N, S, E, W)
- Photos should be taken upstream, downstream, and across the channel. They should encompass all unique features of a reach.
- Photos should be representative. For example, if vegetation is homogeneous throughout the reach only a few photographs are needed. If vegetation is dynamic, multiple photographs should be provided to document these shifts.

Maps:

- *Topographic maps*: this includes historic topographic maps that show any significant change in the channel over time, as well as updated topographic map or LiDAR elevation maps when available. Indicate source (e.g. USGS).
- *Historic Aerial Photographs*: Indicate year, ideally multiple historic aerials will be provided. In cases where there have been significant changes to the stream channel location and size, historic aerials would ideally demonstrate the extent and duration of these events.
- *Location Map:* location of the stream reach within the larger watershed.
- *Other Maps:* NWI, Soils, boundary and land ownership surrounding the stream reach. For Wisconsin all information from the Soil and Water Data Viewer.
- *Maps should include:*
    - Flow Direction
    - Elevation changes
    - Boundaries of associated delineated wetlands and other aquatic resources.
    - Existing stream features and their location (e.g. location of a riffle pool complex).
    - Any existing public data (fish and macro datapoints in the stream, any long-term monitoring locations for the reach).

Additional Information on Worksheet Parameters:

1. **Feature ID**: Provide a unique identifier representative of the reach. For example, if there is too much variation in stream character throughout the impact segment, multiple Stream Features Worksheets may be required. In this case, each reach will require a unique Feature ID.
2. **Waterbody Name**: If waterbody name is unknown, include name of downstream tributary (i.e. unnamed tributary to __).
3. **Investigators**: The name(s) of the individuals collecting qualitative information provided on the form.
4. **Inspection Date**: The date(s) that the information on the form was collected.
5. **County/State**: County and State that the reach is within (i.e. Renville, MN).
6. **Lat/Long**: Latitude and Longitude should be provided in Decimal Degrees, typically at the center coordinates of the project site.
7. **Length of Reach**: Provide the length of the reach in Linear Feet.
8. **Top of Bank Width**: This section is intended to be a rapid measure of the average width throughout the reach. Top of Bank Width is not designed to be an accurate measure, but rather provide an approximate idea of the size of the channel. Other classifications, representative photographs, etc. that can identify size characteristics can be substituted when available.
9. **OHWM Elevation**: Has the OHWM been identified? Provide an average of the location of the OHWM indicators (See #14 below). Use RGL 05-05 (https://www.nap.usace.army.mil/Portals/39/docs/regulatory/rgls/rgl05-05.pdf) and the National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams: Interim Version (https://erdc-library.erdc.dren.mil/jspui/bitstream/11681/46102/1/ERDC-CRREL%20TR-22-26.pdf) for more information.
10. **Special Designations:** Is the reach within mapped, special designations (trout water, 303(d) listed, outstanding resource water, etc.)? If it is not known, provide state unknown. If it is not special designation then say “N/A.” Provide the special designation and any supporting data source. Consideration will be given to if the proposed design address any concerns from special designation streams (i.e. bottomless arch culvert placement for fish passage).
11. **Site Description and Site History**: An adequate description of the site will include a synopsis of the current and historic site use history, water source and surrounding land use. Notation of any large shifts in the stream channel, as well as supporting historic aerial imagery and topographic maps will aid in review. For example: “*This stream reach is an unnamed tributary to Bevins Creek, located within the Minnesota River Basin. The primary land use within the watershed is agriculture, bluffs and urban areas. The water source is a combination of surface water runoff, drain tile runoff and wetland outflow. The site has been farmed continuously since 1975, the treed buffer was removed in 1991 and portions of the channel were straightened. Historic topographic maps and aerial imagery*

showing the channel relocation and the removal of the riparian buffer are provided. A tile map demonstrating the extent of the concentrated flow points along the channel are attached as well."

12. **Associated Wetland(s):** Briefly describe wetlands associated with the reach, and for any relocations any associated wetlands to the relocated area. Wetland type, extent and available delineations when available are invaluable. Provide a map demonstrating the wetland boundaries in the attached materials.
13. **Water Regime:** Check all that apply, explain the reasoning behind the determination as well and the data source.
    a. *Perennial*: The term perennial means surface water flowing continuously year-round.
    b. *Intermittent*: The term intermittent means surface water flowing continuously during certain times of the year and more than in direct response to precipitation (e.g., seasonally when the groundwater table is elevated or when snowpack melts).
    c. *Ephemeral*: The term ephemeral means surface water flowing or pooling only in direct response to precipitation (e.g., rain or snow fall).
    d. *Explain Reasoning*: Provide information on the data source used in the determination (e.g. APT, USGS Stream Stats County Soil and Water District GIS Layer).
14. **Ordinary High Water Mark (OHWM) Criteria:** Check all that apply, explain the reasoning behind the determination and provide representative photographs of each checked criteria in an attachment. Provide a location map with where the unique feature was located within the stream reach.
15. **Unique Features:** Check all that apply, explain the reasoning behind the determination and provide representative photographs of each checked criteria in an attachment. Provide a location map with where the unique feature was located within the stream reach.
    a. Unstable Banks: Wearing of the banks of a stream.
    b. Riffles/Runs: Riffles are shallow features with fast flowing water, typically seen in gravel-bed channels with low-moderate channel slopes. Runs are slower bodies of water that run smoothly. These features are commonly seen with Pools (below).
    c. Pools: often formed after a geomorphic feature, the vertical force of the water creates a pool.
    d. Bridge/culvert: Provide photos and description (necessary in cases of replacement) in an attachment. Ensure that photographs of all features are provided.
    e. Steep Sideslopes: sharply sloped banks sometimes associated with more deeply incised channels or v-shaped channels.
    f. Headcutting: a distinct erosional feature with a abrupt vertical drop in the streambed.
    g. Gravel Bars/Islands: elevated areas of sediment deposited by stream flow.
    h. Hard armoring: Rip rap, concrete, gabion baskets etc.
    i. Diversion/Intake: e.g. invisible weirs pumps, isolated segments of stream, cofferdams etc.
    j. Buildings
    k. Erosion: All types of erosion should be noted.
    l. Channelization
    m. Springs
    n. Dams
    o. Large Woody Debris: Dead wood over 3.3 feet in Length and at least 3.9 inches in diameter at the largest end. Wood must be within the channel or touching the top of the streambank.
    p. Concentrated Flow Points (e.g. Tile): Anthropogenic causes of concentrated flow may include agricultural drainage ditches impervious surfaces, storm drains, and others. Concentrated flow

points are defined as erosional features, such as swales, gullies or other channels, that are created by anthropogenic impacts (MnSQT 2019).

q. Aquatic Fauna: Any observed macroinvertebrates, fish etc. If any other aquatic fauna are observed that may be of interest, please describe in an attachment.
r. Submergent Aquatic Vegetation
s. Undercut Banks

16. **Bed Material Characterization:** This is an estimate to describe the general sediment texture of the channel. Assign percentages based on how much of the channel is observable. In some cases, there will be a notable variation in bed material characteristics throughout the reach. The primary purpose of this metric is to gather a general idea of the bed material character. Provide descriptions of notable features such as of riffle pool complexes. If the bed material cannot be observed due to turbidity, access restrictions etc. then make note of such circumstances.
17. **Vegetation:** Check boxes of the strata that are present in the reach and provide a brief description of the general vegetation characteristics. If some of the strata are more dominant than others (e.g. herbaceous dominated) then make note in the description box. List the dominant species of each strata. Provide representative photographs of vegetation, including riparian buffer.
18. **Riparian Area Width**: This metric may be captured using a desktop method or in the field. If there is significant variation in the buffer width, then provide multiple photographs demonstrating the contraction and expansion of riparian vegetation. This is a general estimate (in feet) of the width of the riparian corridor running along the stream that is estimated perpendicular to the stream. This is the width of the total vegetated buffer that contains riparian vegetation and is free from any soil disturbing land use (e.g. farming, development, road). If vegetation is absent due to a soil-disturbing land use, document the land use in the description box.

Available Resources:

1. Wisconsin Surface Water Data Viewer: https://dnrmaps.wi.gov/H5/?viewer=SWDV
2. Minnesota Geospatial Information Office: https://www.mngeo.state.mn.us/chouse/water_rivers.html
3. USGS Surface-Water Data for the Nation: https://waterdata.usgs.gov/nwis/sw
4. USGS StreamStats: https://streamstats.usgs.gov/ss/
5. Wetland Plants and Plant Communities of Minnesota and Wisconsin (Eggers and Reed, Version 3.2, 2015): https://usace.contentdm.oclc.org/digital/collection/p266001coll1/id/2801/
6. St. Paul District Regulatory Website: https://www.mvp.usace.army.mil/Missions/Regulatory/Mitigation/
    a. This provides information on the SQT, user manuals, past presentations and workshops, etc.

Appendix B: MN Dam Memo

Using the MN SQT to Show Functional Change from the Installation or Removal of Structures that Convert Lotic Systems to Lentic Systems

Background

Definitions: This document pertains to structures that convert lotic systems to lentic systems. In MN these structures may include: Run-of-river dams, farm ponds, culverts, road embankments (with or without culverts), and headwater storage dams.

Introduction: While dams provide flood control, irrigation, and recreation, many dams in the midwestern US have outlived their useful purpose. Installed by mills or log clearing operations, there are some states where it's hard to find small streams that weren't historically dammed. Dams can disconnect habitats, isolating aquatic communities or blocking them from accessing miles of river upstream. Even dams with fish passage structures reduce riverine habitat by turning a lotic system into a lentic system. Dams increase water temperatures, decrease oxygen, and alter the natural flow regime which impacts habitat downstream.[1]

Culverts, particularly those that have a damming effect on baseflows, have a variety of impacts on fish habitat and obstruction of movement and overall ecological connectivity. There is a direct loss of habitat in the channel in the immediate culvert area and upstream and downstream channel impacts caused by scour, aggradation and associated habitat impacts.[2] Water quality degradation impacts are possible as a result of culverts acting as an entry point for road runoff pollutants and road-side ditch and subsurface tile drainage outlets.

Methods for Using the SQT to Show Functional Improvement by Removing Structures

The SQT does not provide an evaluation of lentic ecosystem functions. However, it can evaluate anthropogenically created lentic ecosystems by scoring the function-based parameters and metrics as if they were/should be a lotic system. The following is a description of how the current version of the SQT can be used in culvert and dam removal projects. The examples provided are for reaches that are directly impacted by the structure (dam or culvert) and the upstream reach that has been impounded, i.e., there are at least two reaches affected, one for the structure itself and one upstream of the structure. If impacts occur downstream of the structure or upstream of the impounded section, the SQT should be used as described in the user manual.

Dam/Culvert

For the reach that is the structure (dam or culvert) all existing condition field values are entered as zeros. The proposed condition for the area that contained the structure would be assessed as described in the user manual.

[1] https://www.americanrivers.org/threats-solutions/restoring-damaged-rivers/
[2] http://www.dot.state.mn.us/research/TS/2011/2011-19.pdf accessed 5/1/2020

Upstream impounded reach

The examples below are for restoration projects that take place in the reach upstream of the structure, after the structure is removed. Therefore, the field values for the existing condition reflect the condition of the reach when the system still has the structure and is still impounded. Proposed condition field values would be assessed as described in the user manual. [3]

Many existing condition metrics will be assumed, meaning that a field value will be entered into the SQT without a field assessment. Some will be measured. Measured field values will typically follow the instructions in the user manual, but a few exceptions are noted below. Again, the examples below are for a restoration example in a reach upstream of the structure. The existing condition scores are for the impounded reach and the proposed condition scores are for the restored reach after the structure is removed.

Hydrology (measured field values)

- Enter field values for **reach runoff** metrics. Assess land use coefficient and concentrated flow points OR use the BMP MIDS R_v Coefficient. Do not assess both per instructions in the user manual
    - Assess the land use coefficient and concentrated flow points for the existing and proposed condition using methods outlined in the user manual. Use these metrics if there are no BMPs present or none proposed.
    - Use the BMP MIDS R_v Coefficient method for sites that have BMPs or where BMPs are proposed. Stormwater infiltration is likely to be functioning for the dam if the stormwater runoff from small events is detained in the impoundment and infiltration exceeds outflow. By including this metric for structure removal projects, BMPs that treat runoff source areas are encouraged in the design process.

Hydraulic (assumed field values)

- Enter assumed existing condition field values for **floodplain connectivity** metrics. This parameter would score not-functioning for lentic systems since generally it takes a very large flow event to get water into an impoundment 'floodplain'. The river floodplain is inundated (too much water) in the lentic system.
    - Enter a 10 for bank height ratio field value to score a 0.0 index value.
    - Enter a 0 for entrenchment ratio field value to score a 0.0 index value.
    - The overall floodplain connectivity index score should equal a 0.0.

Geomorphology (combination of assumed and measured field values)

[3] For impact projects (i.e. culvert and dam installation), the process is simply reversed. The user would assess the existing condition per the user manual and use this guide for the proposed condition.

- Enter assumed or measure **large woody debris**. Assessing large woody debris in impounded reaches may be difficult. If used, a piece count is more appropriate than the LWDI measurement method.
    - Using the method that gives you the best estimate (i.e. aerial photographs, wading, or a boat) estimate the number of pieces in the reach. For dam removal projects, a piece count could be done after the water is drawn down, but before dam removal and stream restoration (after appropriate permitting is obtained)[4]. Enter the number of pieces as the field value.
- Enter assumed and/or measured **lateral migration** existing field values. Impoundment banks do not support natural stream migration processes; however, they may have woody vegetation or other characteristics that provide bank stability. Therefore, a user can populate with field values that elicit scores for these metrics equating to functioning-at-risk or not-functioning depending on the vegetation type. A comparison of erosion rates from aerial photographs can inform field values for percent eroding streambank and percent armoring.
    - For assumed BEHI/NBS field values, enter a combination that best describes the site. Field values should yield an index score in the functioning-at-risk or not functioning categories. Justification should be provided for why a specific value was chosen.
    - Using aerial photographs, wading, or a boat, estimate the percent of bank erosion using the same math shown in the user manual. Enter as the existing field value.
    - Using aerial photographs, wading, or a boat, estimate the percent of armoring (but only if armoring is present) using the same math shown in the user manual. Enter as the existing field value.
- Do not enter data for **bed material characterization** as additional refinements are currently being made to the metric associated with this parameter.
- Enter assumed existing field values for **bed form diversity** metrics. The impounded reach will be all pool, no riffle, and the pool depth compared to riffle depth in an impoundment is 1. Note, be sure to set the reference stream type as a C or E. This is done on the Project Assessment Worksheet.
    - Enter an existing condition pool spacing ratio field value of 0.0.
    - Enter an existing condition pool depth ratio field value of 0.0.
    - Enter an existing condition percent riffle ratio field value of 0.0.
    - The overall bedform diversity parameter will have an index score of 0.0.
- Enter assumed or measured **riparian vegetation** field values. Riparian vegetation may be altered in several ways. Large impoundments may totally inundate the previous riparian area, converting riparian vegetation into impounded water. Run-of-river

[4] This number would be estimated prior to permitting and revised/updated once project is permitted and work begins so that the most accurate data can be collected.

impoundments may have little to no impact on riparian vegetation. Culverts totally remove riparian vegetation in the footprint of the culvert and road. Therefore, the existing condition field values will vary depending on the severity of the impact. Assumed values should be used when the entire effective riparian area is inundated. However, when the riparian area is intact, the field values should be measure per instructions in the user manual. Note, be sure to select the appropriate answer in the Site Information and Reference Selection Section for "Woody Vegetation Natural Component," and "Valley Type" before entering field values.

- Assume all applicable metric field values of 0.0 for culverts and impoundments that totally inundate the upstream riparian area. Measure applicable metrics for run-of-river impoundments where the riparian floodplain is intact. Use methods from the user manual.

Physicochemical & Biology

A combination of measured and assumed field value methods may be considered for each parameter. While macros and fish will likely be present in the impounded reach, we assume the species composition will match a lentic system rather than a lotic system. This presents difficulties in comparing/evaluating the measured values in the lentic system against the lotic system. Whether or not measured values are available, consult with the agencies to get additional guidance on how to use assumed or measured values in the SQT.

Appendix C: Site Selection Criteria Checklist

US Army Corps of Engineers ®
St. Paul District

Site Selection Criteria
for Compensatory Mitigation Proposals
USACE St. Paul District
June 2021

Project Specific Information
Compensation Site:

Corps File Number:

Date:

The U.S. Army Corps of Engineers St. Paul District (Corps) developed this checklist to assist sponsors in Minnesota and Wisconsin with selecting sites that have potential to provide successful compensatory mitigation projects. 33 CFR 332.3 identifies factors the U.S. Army Corps of Engineers considers related to site selection. A compensatory mitigation site must meet the needs of the watershed and be ecologically suitable for providing the desired aquatic resource functions. In determining whether a site has potential as a compensatory mitigation project, the Corps will consider several site selection factors. Not every site is eligible or suitable for approval as a compensatory mitigation site.

The Corps intends for sponsors to use this checklist early in their site selection process, and for this checklist to transparently and consistently communicate important site selection factors. This checklist will help guide sponsors to select sites that meet the intent of 33 CFR 332, meet minimum District requirements, avoid common "fatal flaws" that can prevent approval, and have potential for agency approval. Conversely, a sponsor's use of this checklist may conclude that a site has fatal flaws or other characteristics that would prevent approval and can save the sponsor expenditure of funds for development of a prospectus on a site unlikely to receive Corps approval.

Sponsors should submit this accurately completed checklist with their Prospectus, along with any supplemental information and documentation needed to support each item. The Corps will use the provided information to evaluate ecological suitability of the selected site and determine whether the site has potential as a compensatory mitigation site. If the sponsor's project proceeds to DMBI, the sponsor should update and submit this checklist with their Mitigation Plan.

This checklist is divided into three primary categories. Category 1, Avoiding Fatal Flaws, are considered standard requirements and a project must generally meet all relevant criteria for the Corps to determine the site has potential. Categories 2 and 3, Location within the Watershed and Site Characteristics, include criteria that represent beneficial aspects (not exclusive) of a project that would likely contribute to overall ecological suitability. Generally, the more criteria selected and documented, the better the site and more likely the Corps will approve the compensatory mitigation project. However, project proponents should be aware that completion of this checklist does not guarantee approval. Ultimately the Corps will based its decisions regarding site potential and site approval on a variety of site-specific factors, IRT comments, program goals and the considerations outlined in 33 CFR 332.

1. Site Selection Criteria – Avoiding Fatal Flaws (Meeting every item in this list is generally considered a requirement for site approval)

- ☐ If activities related to stream credit are proposed, the Catchment Assessment Form in the MN SQT demonstrates that the catchment and contributing area for the project reach is in fair or good condition and the restoration potential for the project is full or partial
- ☐ If activities related to stream credit are proposed, site activities will result predominantly in stream restoration activities and involve no stream creation
- ☐ Activities do not consist of wetland creation except as a minor component of the project
- ☐ Site is not located within 10,000 linear feet of an airport
- ☐ Site is not located within an abandoned or active non-metallic or metallic mine, tailings basin, or sand or gravel pit
- ☐ The site has no known encumbrances (ex. easements, liens, rights of way, reserved timber, severed surface or subsurface mineral or natural gas rights, etc.) that limit or negatively affect the compensation site goals.
- ☐ The landowner and sponsor are willing and able to grant a conservation easement for the entire compensatory mitigation area to include all wetland and stream resources and sufficient upland buffer area to the state of Minnesota or Wisconsin or another natural resources agency or non-profit
- ☐ Adjacent land uses will not compromise or limit compensatory mitigation activities, extent of compensatory mitigation site boundaries, or site success. Information about ongoing or anticipated development, infrastructure, mines and quarries, encumbrances, or other activities on adjacent properties must be considered.
- ☐ The sponsor will design the site to be self-sustaining in the long-term, requiring no active hydrologic or structural management activities post-monitoring period (ex. significant structure maintenance, water level adjustment, riprap, etc.). An exception may include sites where active vegetative management activities are required to maintain functional lift, In such cases, the Corps may require a long-term funding mechanism
- ☐ For wetlands, potential to yield at least 5 credits (MN) or 20 acres (WI)
- ☐ Sponsor is a single entity holding property rights (via in-fee ownership or easement for LLCs) over the site
- ☐ Adjacent properties are free of major invasive vegetation species infestation, or existing infestations are being and would continue to be managed, such that the adjacent properties are not anticipated to pose a significant risk to site sustainability

☐ Site is not located within the cone of depression of a high capacity well

☐ Site activities will not hydrologically affect adjacent properties (unless the adjacent property is part of the mitigation site proposal and the sponsor would place the adjacent property under conservation easement or obtain a flowage easement is obtained)

☐ No federal funding or easements onsite in areas where credits would be generated (NACA, WRP, etc.)

☐ Site's stream resource(s) is contiguous with or connected to other aquatic resources

☐ For streams, sufficient riparian area on both sides of the channel will be protected as part of the project

☐ Stream design does not include hard armoring and work is not limited to bank stabilization

☐ For stream reaches, site has not been logged in the past 10 years

2. Site Selection Criteria – Location within the Watershed

☐ Project will contribute to habitat connectivity, reducing fragmentation by establishing new or expanding existing wildlife corridors

☐ Proposed wetlands are contiguous with or connected to other aquatic resources

☐ Site is identified in local, state, or federal watershed plans, environmental action plans, or landscape level wetland restoration prioritization mapping tools as important/appropriate mitigation for the watershed

☐ Project is adjacent to other conserved properties

3. Site Selection Criteria – Site Characteristics

☐ Site activities projected to result in wetland credits (not including upland buffer credits allocated as wetland) generated predominantly through wetland restoration (rehabilitation and re-establishment) activities

☐ Presence of drainage infrastructure (typically ditches or tile) that can be disabled as part of the project (considering public versus private management rights)

☐ Cultural resources are known to or may be present onsite that would be protected by this project

☐ Site supports or would support critical habitat for state listed threatened or endangered species

- ☐ Site supports or would support critical habitat for federally listed threatened or endangered species
- ☐ Project will provide critical habitat for species of greatest concern, as identified by wildlife management plans or other similar documents
- ☐ If site is located within 5 miles of an airport, it is not located in direct line with approach and takeoff paths and would not result in shallow marsh or deeper wetland communities
- ☐ Activities do not entail the conversion of other aquatic resources to wetlands (Exception: Removal of man-made or man-altered features for the purpose of returning historic aquatic resources)
- ☐ If preservation is proposed, activities qualify for preservation per all requirements outlined in 33CFR 332, and St. Paul District Guidance on Evaluating Preservation Sites for Eligibility
- ☐ Low risk of encroachment by adjacent landowners, considering both adjacent land use type and number of individual property owners
- ☐ Contains sufficient buffer between the wetlands or stream proposed for credit and adjacent properties
- ☐ Contains historic predominantly hydric soils that have been effectively or partially drained by existing, maintained drainage infrastructure

Appendix D: Completeness Checklist for Prospectus

US Army Corps of Engineers ®
St. Paul District

Requirements for Submitting a Complete Prospectus for Sites Involving Wetlands or Streams

U.S. Army Corps of Engineers, St. Paul District

The Prospectus must provide a summary of the information regarding the proposed mitigation bank or in-lieu fee program site, at a level of detail sufficient to support informed comment by the public and IRT. A bank prospectus must contain the following information to be deemed complete by the St. Paul District.

☐ **Owner and Agent**. Identify the bank sponsor and any consultants or experts to be involved in design of the compensation site. Only one entity or individual may be the sponsor and sign the Instrument. To be the sponsor, the entity must have unified property rights and control giving them the ability to sign the MBI and fulfill its obligations. Typically, this either means that the sponsor is the in-fee title owner, holds an easement over those parcels they don't own, or is an LLC holding property rights (typically via easement) over one or more parcels.

☐ **Objective(s)**. Describe the specific objective(s) of the proposed mitigation bank or in-lieu fee program. For example, *bank will result in the re-establishment of X acres of sedge meadow wetland and x acres of upland buffer.*

☐ **Project Assessment Worksheet**. For projects involving streams, complete the project assessment sheet in the SQT, which provides a description of the goals and objectives for the project. Instructions for completion can be found in the Minnesota Stream Quantification Tool User Manual.

☐ **Operation**. Describe how the mitigation bank or in-lieu fee program will be established and operated.

☐ **For wetlands.** Include a general description of anticipated design concept for wetland restoration, enhancement, or creation at the proposed compensation site. For example, *existing tile will be fully removed and excavated ditches will be filled completely to re-establish wetland hydrology and bank site will be managed to promote wet meadow, sedge meadow, and shrub carr plant communities*;

☐ **For streams.** Include a general discussion of the watershed and onsite stressors and functional parameters to be improved. Include reference to the stressors identified in the catchment assessment form and how they are anticipated to affect site success and sustainability.

☐ **Service Area**. Identify the proposed service area.

☐ **Need.** Describe the general need for the proposed mitigation bank or in-lieu fee program. For example, t*here are currently no banks located in this bank service area*, or w*etlands of the types proposed to be restored have been lost in large quantities in the watershed*.

☐ **Technical Feasibility.** Describe the likelihood of successfully completing the project based on the expertise of the designers, proven methods, or other information available to the Sponsor. For example, *this kind of restoration has proven successful on XX sites in comparable landscape positions in this ecoregion*.

☐ **Stream Channel Evolution.** For stream proposals, Prospectuses must assess and identify the likely current, historic and potential proposed stream classification type. This should include identification of any potential or known reference reaches.

☐ **Ownership and Long-term Management**. Identify the proposed ownership arrangements and long-term management strategy for the mitigation bank or in-lieu fee project sites. For example, *DNR, who manages adjacent property, has indicated an interest in owning and managing the site long-term*.

☐ **Qualifications**. Describe the qualifications of the sponsor to successfully complete the type(s) of mitigation project(s) proposed, including information describing any past such activities by the sponsor. For projects involving stream mitigation, the involvement of a qualified stream restoration professional is required.

☐ **Ecological Suitability**. Describe suitability of the site to achieve the objectives of the proposed mitigation bank, including the physical, chemical, and biological characteristics of the bank site and how that site will support the planned types of aquatic resources and functions.

☐ **Catchment Assessment Worksheet**. The completion of the catchment assessment worksheet is a required part of a complete Prospectus for sites involving stream mitigation. Instructions for completion can be found in the Minnesota Stream Quantification Tool User Manual.

☐ **For Sites Involving Preservation**. Proposals involving preservation of aquatic resources must also include the information required under 33 CFR 332.3(h).

☐ **Site Selection Checklist.** Complete the site selection checklists (for wetlands and streams based on the aquatic resource activities proposed). Include a copy of the completed checklist along with all background or supporting documentation.

☐ **Hydrology**.

☐ **For Wetlands:** Provide assurance of sufficient water supply and drainage rights to sustain the proposed water regimes on the site in both the short- and long-term. Include documentation of any existing or anticipated right of the landowner or others to remove water, soil, minerals or biomass from within or adjacent to the site boundary. Also include documentation of any existing or anticipated right to drain water through, from, or onto the bank site or impound water on the bank site (e.g., tile outlets onto the property, ditches through the property, flooding easements, flowage easements, drainage easements, maintenance easements).

☐ **For Streams:** Provide the same hydrology considerations, supply and drainage features as for wetlands. In addition, identify the existing linear feet of tributary onsite and denote if the tributary is a public or navigable water under MN or WI statute. The

presence of any rights held by a drainage authority over the stream, such as for maintenance of formerly channelized streams, must be identified. The information should also include the flow regime (perennial, intermittent, ephemeral), location of any springs or seeps, impaired waters, number of concentrated flow points, etc.

☐ **Adjacent Property Owners Contact Information.** 33CFR 325.3 requires that public comments on the Prospectus be solicited via a public notice. Because copies of the public notice must be sent to all adjacent property owners, the Prospectus submittal must also include the names and mailing addresses of all adjacent property owners.

Although not specifically required by the mitigation rule, a site location map and an air photograph of the site are essential for meaningful agency and public comment. The St. Paul District will not determine a Prospectus is incomplete if these items are not provided, but it will limit the ability of reviewers to critically evaluate the proposal. Maps accompanying a Prospectus should typically include the following:

- A plat or land ownership map
- Topographic or survey information
- Boundaries of the proposed compensatory mitigation site;
- National Wetland Inventory; State Wetland Inventory
- USDA soil survey map that shows soil map units (w/ legend, series descriptions) include a list of map units that are:
    - Predominantly hydric (list % hydric soil series in map unit),
    - Have some portion hydric (list % hydric soil series in map unit), and
    - Predominantly non-hydric (list % hydric soil series in map unit, if any);
- Adjacent county highway information; and
- Land-cover/land-use map

Sponsors also are strongly encouraged to consider including the following with their submittal.

- Existing wetland acreage;
- Existing land use;
- Proposed soil and hydrologic modifications;
- Historic and current versus proposed plant communities and anticipated dominant species, water regime, and approximate acreage;
- Proposed performance standards and monitoring methods for assessing how the objectives of the mitigation bank will be met;
- Potentially Restorable Wetlands (if available).

Appendix E: Completeness Checklist for Mitigation Plan

US Army Corps of Engineers ®
St. Paul District

Requirements for Submitting a Complete Mitigation Plan for Sites Involving Streams or Wetlands

U.S. Army Corps of Engineers, St. Paul District

All proposed compensatory mitigation plans must include a discussion of the following items. This requirement applies to all mitigation banks, in-lieu fee programs and permittee-responsible mitigation proposals. A compensatory mitigation plan cannot be approved by the Corps until the following items are included. These requirements are the result of the federal regulations entitled Compensatory Mitigation for Losses of Aquatic Resources released on April 10, 2008. These regulations are found at 33 CFR Part 332. Please provide the following information and a completed copy of this checklist with the submittal of a compensatory mitigation plan:

☐ **Mitigation objectives:** Describe the resource type(s) and quantities that will be restored, created, enhanced or preserved. Discuss the resource functions and how these functions address the needs of the watershed or other geographic area of interest. The watershed approach is defined in the new Compensatory Mitigation for Losses of Aquatic Resources regulation at 33CFR Part 332.3(c).

☐ **For Streams.** This must directly relate to the existing versus proposed condition assessment completed using the SQT.

☐ **Site selection:** Describe the factors considered during the site selection process. This should include consideration of the watershed needs, on-site alternatives where applicable and the practicability of accomplishing ecologically self-sustaining aquatic resource restoration, establishment, enhancement, and/or preservation at the compensatory mitigation site.

☐ **Site Selection Checklist.** Update the site selection checklists (for wetlands and streams as needed based on the aquatic resource credits proposed). Include a copy of the completed checklist along with all background or supporting documentation required in those checklists.

☐ **Site protection instrument:** Describe the legal arrangements and documents including verification of site ownership that will be used to ensure the long-term protection of the compensatory mitigation site.

☐ **Baseline information:** Describe the ecological characteristics of the proposed compensatory mitigation site and, in the case of an application for a DA Permit, the impact site. This may include descriptions of historic and existing plant communities, historic and existing hydrology, soil conditions, a map showing the locations of the impact and the mitigation sites(s) or the geographic coordinates for those site(s), and other site characteristics appropriate to the type of resource proposed as compensation. The baseline information should also include a delineation of the waters of the United States on the proposed compensatory mitigation project site. A perspective permittee planning to secure credits from a mitigation bank or an in-lieu fee program only needs to provide baseline information about the impact site, not the mitigation bank or the in-lieu fee project site.

☐ **SQT.** Projects involving the restoration of streams must assess baseline site conditions for all required parameters in the SQT, including supporting field data.

☐ **Determination of credits:** Describe the number of credits to be provided, including a brief explanation of the rationale for this determination (stream or wetland assessment method). For permittee-responsible mitigation, this should include an explanation of how the compensatory mitigation project will provide the required compensation for the unavoidable impacts to aquatic resources resulting from the permitted activity. For permittees intending to secure credits from an approved mitigation bank or in-lieu fee program, it should include the number and the resource type of credits to be secured and how these credit needs were determined. Any stream credits must be calculated by the **change** in Functional Feet from an existing to a proposed condition using the SQT.

☐ **Mitigation work plan:** Provide detailed written specifications and work descriptions for the compensatory mitigation project, including, but not limited to, the geographic boundaries of the project; construction methods, timing, and sequence; source(s) of water, including connections to existing waters and uplands; methods for establishing the desired plant community; plans to control invasive plant species; the proposed grading plan, including elevations and slopes of the substrate; soil management; and erosion control measures. For stream mitigation projects, the mitigation work plan may also include other relevant information, such as plan form geometry, channel form (e.g., typical channel cross-section), watershed size, design discharge, and riparian area plantings.

☐ **Maintenance plan:** Provide a description and schedule of maintenance requirements to ensure the continued viability of the resource once initial construction is completed.

☐ **Performance standards:** Provide the ecologically-based standards (hydrology, plant survival, habitat features, etc.) that will be used to determine whether the compensatory mitigation project is achieving its objectives. Individual performance standards are required for each aquatic resource type proposed for credit.

☐ **Monitoring requirements:** Provide a description of the parameters to be monitored and a monitoring schedule. The site attributes to be monitored and level of monitoring effort proposed should be sufficient to determine if the compensatory mitigation project is on track to meet the performance standards and provide the functional improvements described in the site objectives for each aquatic resource type proposed. The monitoring plan should also have provisions for determining whether adaptive management is needed at various points throughout the monitoring period. A schedule for reporting monitoring results to the Corps Regulatory Division must also be included.

☐ **Long-term management plan:** Provide a description of how the compensatory mitigation project will be managed after performance standards are achieved to ensure the long-term sustainability of the resource. The party responsible for the long-term management must be identified. In addition, if the nature of the long-term management proposed is sufficient to warrant funding dedicated to that task, a long-term financing mechanism must also be identified.

☐ **Adaptive management plan.** This plan should address strategies to address unforeseen issues associated with site conditions or other components of the compensatory mitigation plan. This plan will guide decisions for revising the original construction plan and implement measures to address both foreseeable and unforeseen circumstances that adversely affect the success of the compensatory mitigation project. The plan must identify the party or parties responsible for implementing the adaptive management plan.

☐ **Financial assurances.** Provide a description of financial assurances that will be provided and how they are sufficient to ensure a high level of confidence that the compensatory mitigation project will be successfully completed and managed for the long-term, in accordance with the required ecological performance standard. The financial assurance can be in the form of performance bonds, escrow accounts, casualty insurance, letters of credit or other appropriate instruments approved by the Corps. For government agencies or a public authority, the Corps may accept a formal, documented commitment to funding the project or bank program as an acceptable assurance on a case-by-case basis (*e.g.*, documentation that funds allocated by a legislature or from bonding are encumbered for a specific project). Financial assurances are required for all projects involving stream mitigation.

☐ **Other Information:** Refer to the Prospectus' initial evaluation letter. Any information listed as having to be addressed in a DMBI must be provided for the DMBI to be determined to be complete.