US Army Corps of Engineers ®
Fort Worth District

FORT WORTH DISTRICT

MITIGATION BANKING GUIDELINES COMPILATION

Since the promulgation of the Compensatory Mitigation for Losses of Aquatic Resources in 2008, the U.S. Army Corps of Engineers, Fort Worth District (District), in conjunction with the District Interagency Review Team (IRT), has developed guidelines covering specific elements for the establishment of mitigation banks within the District. These guidelines have been developed based on input from the IRT, as well as the mitigation banking community, including mitigation bank sponsors and consultants The purpose of these guidelines is to establish a series of considerations that may be incorporated into mitigation banking proposals and will serve to increase predictability and transparency for mitigation banking activities, in addition to expediting the mitigation banking process. The first set of five guidelines was published in a public notice (CESWF-10-MITB) in June 2011. Since then, two additional sets of guidelines (CESWF-12-MITB dated July 2016 and CESWF-18-MITB dated January 2019) addressing an additional 35 elements have been developed. The following is a compilation of these guidelines organized in a general chronological order relative to the mitigation banking review process. It should also be noted that many of these guidelines will also apply to proposed permittee-responsible mitigation proposals.

It is anticipated additional guidelines will be developed in an effort to continue to improve the quality of the mitigation banking program within the district. These additional proposed draft guidelines will be published through a public notice to inform the public and solicit comments.

GENERAL:

Templates - The use of the Fort Worth District templates, including templates for Prospectus, Mitigation Banking Instrument, Conservation Easement, and Sample Tables for short and long-term financial assurance is encouraged. These templates can be found on the Fort Worth District Regulatory Home Page at http://www.swf.usace.army.mil/Missions/Regulatory/ .

Document Submittal - Upon request by the USACE, proposed bank sponsors would be required to send hard copy documents (draft prospectus, prospectus, draft MBI(s), final MBI, reports, etc.) directly to the IRT. In an effort to expedite IRT review, Sponsors should also submit annotated versions of revised documents to clearly demonstrate how all comments have been addressed.

Consideration of Recently Disturbed Sites - Any sites that have recently undergone human induced alteration which would artificially create low baseline conditions will generally not be considered as potential mitigation banks until such time as the site has remained in an unaltered state for a period of five years. These activities include, but are not limited to cutting, clearing, logging, burning, mowing, application of herbicides, ditching, draining, mining, and dam/berm removal. Any activities that serve to maintain an artificially low baseline condition of the site, would be considered further alteration activities and would initiate another five year waiting period. Typical exceptions to this waiting period would include the application of herbicides solely for the control of exotic invasive species or beneficial management activities that have been performed on the property on a long-term continuous basis. Consideration will be given to the historical land use of a site. A complete documentation relative to a site's recent land use history will be required in the Prospectus as part of the proposed bank review.

Preservation - In certain cases, the preservation of threatened, high quality aquatic resources may be preferable to the potential loss of the resources due to anticipated impacts. The inclusion of preservation within the program may be appropriate when all criteria are met as specified in Part 3 332.3(h)(1)(i)-(v). In particular, in determining whether requirement 332.3(h)(1)(ii) is sufficiently met, the bank sponsor must demonstrate that the resources to be preserved significantly contribute to the ecological sustainability of the watershed. In making this determination, several resource characteristics may be considered, including the extent to which an aquatic resource is unique, rare, threatened, or hard to replace.

When determining potential credits for a preservation component of a bank, the use of a functional/conditional assessment can be problematic in determining functional lift. The primary ecological benefit from preservation is the long-term protection of the site and not the lift. Most assessment models do not accurately capture this element. Therefore, preservation credits would be determined on an acre basis (i.e. one acre of preservation = one preservation credit). However, an assessment model can be used to calculate the baseline conditions and quality of the site to determine if the site is suitable for preservation.

Preservation credits will be released with the initial credit release, provided all elements for initial release have been met, including the signing and recording of the site protection instrument (conservation easement), and full funding of the long-term endowment. All preservation credits will be recorded on a separate credit ledger.
Since an assessment model will not be used in determining potential bank preservation credits, it would not be appropriate to use a model to determine credit requirements for aquatic resource impacts. Therefore, a ratio would be developed for determining preservation credit requirements. Initial proposed ratio for impacts to in-kind aquatic resources would be 15:1. Further discussion could be had for reducing ratios for impacts to lower quality aquatic resources.

As previously stated, the primary ecological benefit from preservation is the elimination of the threat and the long-term protection of the site. Therefore, particular importance would be placed on the site protection instrument and the long-term endowment. The use of a conservation easement held by a third-party would provide the most secure method to ensure the perpetual protection of the site. Requiring the long-term endowment to be fully funded prior to release of the preservation credits, would also ensure that funds are available should unforeseen management/maintenance issues arise.

Initiation of Mitigation Activities - The bank sponsor should initiate the mitigation activities specified in the mitigation banking instrument within one year of the initial credit release. These mitigation activities are in addition to the activities specified for the initial credit release. The bank sponsor may request an extension to the one-year initiation date.

Modifications of Existing MBI's - In most cases, modifications to an existing MBI will require a full re-evaluation and coordination of the MBI, in accordance with the process and timeline outlined in the Mitigation Rule. As part of this process, all revised MBI's must be consistent with the Mitigation Rule and will be examined form compliance with all current Fort Worth District (SWF) guidance current at the time of the modification request. Modifications resulting in the alteration of the number or type of available credits may result in the temporary suspension of credit sales for the duration of the MBI re-evaluation process.

PROSPECTUS:

Service Area - The primary, secondary, and tertiary service areas for proposed wetland and stream mitigation banks will be determined utilizing watersheds based on the 8-digit Hydrologic Unit Code (HUC) and the Level III Ecoregions of Texas (Omernik 2004).

The primary service area is defined as the entire 8-digit HUC within which the mitigation bank is located (regardless of Ecoregion). The secondary service area is defined as any 8-digit HUC (or portion thereof) adjacent to the primary service area, and located within the same Level III Ecoregion as the mitigation bank. The tertiary service area is defined as any 8-digit HUC (or portion thereof) adjacent to the primary service area, but located outside of the same Level III Ecoregion as the mitigation bank. All secondary and tertiary service area must be located within the same major river basin as the primary service area (Sulphur/Cypress, Sabine, Neches, Trinity, Brazos, Colorado, etc.) Tertiary service areas may not extend beyond the limits of the adjacent Ecoregion as that of the mitigation bank. Ratios for service areas will generally be as follows: Primary Service Area 1 : 1, Secondary Service Area 1.5 : 1, and Tertiary Service Area 3 : 1.

Specific service areas may be developed for individual banks on a case by case basis. However, use of the above guidelines will serve to expedite the evaluation of proposed mitigation banks and will likely be appropriate for most banks proposing to operate within the Fort Worth District.

Title Abstract - As a component of the Prospectus, the bank sponsor shall provide a copy of a title abstract, including a 100-year title search of the proposed mitigation bank property performed by a title company operating within the state. The bank sponsor shall submit an attorney's Opinion of Title prepared in accordance with Federal Title Standards, addressing each scheduled exception to the title and either clear said exception, or explain its permissible use in relation to the proposed project. The Opinion of Title may be structured in a manner similar to that used in a standard American Land Title Association Title Commitment Form. Dependent upon the location of the proposed mitigation bank site and potential for mineral extraction on properties adjacent to the proposed site, a title abstract, including a 100-year title search may be required on adjacent properties. This information may be required on a case-by-case basis to identify and evaluate the likelihood and extent to which existing or proposed land use activities located on adjacent lands could adversely affect the ecological condition of the proposed bank site.

Conservation Easement Holder Qualifications and Experience - As a preference the conservation easement should be held by a nationally accredited 501(c)(3) land trust organization. In the event the organization being considered is not nationally accredited, the organization's Board of Directors should have in its corporate resolutions the adoption of the National Land Trust Alliance's Statement of Land Trust Standards and Practices as guiding the practices of the organization. (The Statement is available from LTA (www.lta.org or 202-638-4725). In all cases the bank sponsor will be required to provide details on the organization's qualifications, personnel, and experience relative to the preservation and management of aquatic resources and/or habitat conservation areas.

Consultant Qualifications and Experience - The bank sponsor shall provide details on the qualifications and experience of their consultants. Particularly for stream mitigation projects, and other projects involving uncertain hydrologic conditions, the qualifications and experience of the consultants will be reviewed. In addition, the sponsor shall submit, for IRT review, examples of past projects similar in nature to those proposed that have been completed by the consultant. In the event that the consultant does not have extensive experience in these areas, the IRT may require a greater degree or amount of monitoring, revision of the credit release schedule, and increased financial assurances.

Phase I Environmental Assessment - All mitigation bank sites would require a Phase I Environmental Assessment in accordance with ASTM Practice E-1527-13, or most up to date practice, at the Prospectus Phase. This information would be submitted in addition to other relevant criteria to ensure appropriate site selection.

Long-term Hydrology - For projects involving wetland enhancement or preservation, the sponsor shall address the adequacy and source of current hydrology and demonstrate the site currently possess adequate hydrology to sustain the site as a wetland. If wetland restoration is prescribed, and hydrology is the limiting factor, then the sponsor must also address where and how they will obtain adequate hydrology for the site.

As part of determining hydrology, the sponsor shall also review/investigate any activities upstream (or downstream) that may have potential future impacts on this hydrology. This investigation will include, but is not limited to, a review of the Texas Water Development Board's current State Water Plan to identify any proposed reservoirs that could influence hydrology. In addition, the sponsor shall evaluate any proposed residential, commercial, or industrial development within the watershed that could affect the site's hydrology. The sponsor should also review any recent USACE 404 permit actions, or any actions currently under review, that could indicate potential hydrologic impacts to the bank site. Existing water rights and the proximity of the bank site to potential urban expansion shall also be reviewed. In most cases, the acquisition of water rights for the purpose of assuring adequate long-term hydrology of the site will not be practicable.

On a case-by-case basis, the USACE may require a water budget to be developed when long-term sustainable hydrology may be an issue.

MBI:

Baseline Data - All baseline data, including Jurisdictional Determination, Texas Rapid Assessment Method, and other relevant data should not have been collected more than five years prior to submission of the draft mitigation banking instrument. Notable changes within the watershed or site conditions during this time period may require re-evaluation of the baseline data.

Force Majeure - Any delay or failure of the bank sponsor shall not constitute a default hereunder if and to the extent that such delay or failure is primarily caused by any act, event, or conditions beyond the bank sponsor's reasonable control and significantly adversely affects their ability to perform their obligations hereunder, including: (i) acts of god, lightning, earthquake, fire, landslide, or interference by third parties; (ii) condemnation or other taking by any governmental body; (iii) change in applicable law, regulation, rule, ordinance or permit

condition, or the interpretation or enforcement thereof; (iv) any order, judgment, action, or determination of any federal, state, or local court, administrative agency, or government body; or (v) the suspension or interruption of any permit, license, consent, authorization, or approval. If the performance of the bank sponsor is affected by any such event, bank sponsor shall give written notice thereof to the Interagency Review Team as soon as is reasonably practicable. If such event occurs before the last sale of credits and bank closure, the bank sponsor shall take remedial action to restore the property to its condition prior to such event, in a manner sufficient to provide adequate mitigation to cover credits that were sold prior to such delay or failure to compensate for impacts to waters, including wetlands, authorized by Department of the Army permits. Such remedial action shall be taken by the bank sponsor only to the extent necessary and appropriate, as determined by the Interagency Review Team.

RIBITS Credit Ledger - All MBI's shall have a RIBITS reporting section as follows:
The Sponsor shall be responsible for maintaining the bank's credit ledger in the Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS). All credit transactions should be entered into the database no later than seven calendar days after the transaction has occurred or the USACE reserves the right to suspend credit sales until sales transactions are deemed current and compliant. RIBITS mandatory information fields include the following:

1. Jurisdiction
2. Transaction Date
3. Credits Debited
4. USACE Permit Number
   Format: SWF/Year/Permit Number *must be 5-digits long (example: SWF-2000-00150)
5. Name of Permittee
6. Credit Classification (if applicable, with functional assessment subcategories identified; i.e. if HGMi identify amounts within each subcategory TSSW/RSEC/MPAC, etc.)
7. Specific Area(s) Within Bank That Credits Are To Be Debited (example: Enhancement Area 1, Upland Buffer, Ephemeral Stream, Intermittent Stream, Etc., based on how total potentially available credits are distributed throughout different areas in the bank and where they have been released)

Compliance with RIBITS reporting does not supersede the requirement of the sponsor to submit individual transaction reports.

Initial Credit Release for Steam and Wetland Creation - Due to the high risk of failure associated with stream and wetland creation, initial credit releases will generally not be approved for those areas that are not waters of the U.S. at the time baseline surveys are performed. Upon determination by the USACE that the new normal conditions exist on the

project site, the initial credit release will be approved upon identification of the extent, limits, and type of waters of the U.S. as verified by the USACE, in addition to other performance standards specified in the mitigation banking instrument.

Credit Release Schedule - Credits are the currency of Mitigation Banks. The USACE approves the number of mitigation credits that would be available for sale dependent on the specifics of each bank, including considerations such as baseline condition and ecological lift. Credits become available for use or sale only at such time as certain requirements are met. The following credit release schedules based on further analysis of a particular proposal, will be considered reasonable by the IRT. However, further analysis may be required for unique sites or situations.

Wetland Mitigation Banks & Stream Mitigation Banks-Riparian work only

15% - Initial release (Compliance with all initial success criteria)
20% - Post planting, construction, and demonstration of hydrology (Including success criteria)
15% - After two full growing seasons (Including success criteria)
10% - Interim release based on functional/conditional assessment - Minimum of 3 years after planting
10% - Interim release based on functional/conditional assessment - Minimum of 5 years after planting
10% - Interim release based on functional/conditional assessment - Minimum of 7 years after planting
20% - Final release based on functional/conditional assessment. A long-term management non-wasting endowment or other approved financial mechanism must be fully funded prior to final credit release.

Stream Mitigation Banks

Stream - Complete channel restoration – 75% or more of channel needs reconstruction

30% - Initial release (Compliance with all initial success criteria)
10% - Post planting/construction
10% - Project survival of two bank full events at least one year apart (Bank full events may occur any time after construction is completed. At least one bank full event must occur before the 1st assessment. Five percent released for each bank full event.)
10% - Interim release based on functional/conditional assessment at a minimum of 2 years
10% - Interim release based on functional/conditional assessment at a minimum of 3 years
10% - Interim release based on functional/conditional assessment at a minimum of 5 years
20% - Final release based on functional/conditional assessment (The second bank full event must occur and the long-term management non-wasting endowment must be funded prior to final release.)

Stream - Only partial channel restoration with varying amounts of riparian restoration

20% - Initial release (Compliance with all initial success criteria)

15% - Post planting/construction

15% - After two full growing seasons if success criteria are achieved and project survival of two bank full events at least one year apart (Bank full events may occur any time after construction is completed. At least one bank full event must occur before the 1st assessment. Five percent released for each bank full event.)

10% - Interim release based on functional/conditional assessment at a minimum of 2 years

10% - Interim release based on functional/conditional assessment at a minimum of 3 years

10% - Interim release based on functional/conditional assessment at a minimum of 5 years

20% - Final release based on functional/conditional assessment (The second bank full event must occur and the long-term management non-wasting endowment must be funded prior to final release.)

As identified in the Mitigation Rule, streams are a “difficult-to-replace resource”. Stream mitigation banks shall identify the type of stream as ephemeral, intermittent, or perennial. Credit withdrawals shall be in-kind between the impact and bank.

Preservation

100% - Released only after the conservation easement is finalized and the long-term management financial mechanism is fully funded.

Financial Assurances - The bank sponsor will be required to provide financial assurances, in accordance with the 2008 Mitigation Rule. These financial Assurances would typically cover 110% of all costs associated with project construction for short-term financial assurance. The additional 10% would cover any contingencies (i.e. replanting, further manipulation of hydrology). In order to determine the appropriate amount of funds to be established in the short term financial assurance, the bank sponsor shall provide a detailed breakdown of all project related costs, such as those included in the bank's site development plan. These items should include, but are not limited to the following: as-built plans/survey work, costs of land ownership/control, earthwork, permits, erosion control measures, structures, building materials, plant materials, seeding, planting, fencing, control of exotic invasive species, implementation of adaptive management activities, , monitoring and reporting including monitoring of hydrology, plants, or other elements related to site condition, fence repair and maintenance, administration/legal costs such as associated with establishment of financial assurances endowments and the conservation easement.

Reduction of Short-term Financial Assurances - Due to the increased risk of failure associated with steam restoration and enhancement activities, short-term financial assurances should be fully retained until such time as the bank has achieved full performance standards as specified in the mitigation banking instrument.

Funding of Long-Term Endowment - In addition to achieving certain activities and/or performance standards, incremental funding of the long-term endowment would be a requirement of credit release. Long term financial assurances would be funded in accordance with the following schedules.

Wetland Mitigation Banks & Stream Mitigation Banks (riparian work only)

Credit Release	Financial Assurance Funding
15%	0%
20%	15%
15%	35%
10%.	50%
10%.	60%
10%	70%
20%	100%

Stream – Complete Channel Restoration – (75% or more of channel needs reconstruction)

Credit Release	Financial Assurance Funding
30%	0%
10%	30%
10%	40%
10%	50%
10%	60%
10%	70%
20%	100%

Stream – Only Partial Channel Restoration with Varying Amounts of Riparian Restoration

Credit Release	Financial Assurance Funding
20%	0%
15%	20%
15%	35%
10%	50%
10%	60%
10%	70%
20%	100%

Adjustment of Long-Term Endowment Funds - Until the endowment fund is fully funded, the amount of the applicable endowment principal would be adjusted annually by a percentage equal to the percentage increase, if any, in the Consumer Price Index (CPI). The adjustment shall be applied to the amount of the applicable endowment principal.

Design Plans for Mitigation Projects - As part of the IRT review process for in-stream work associated with mitigation projects, Bank Sponsors would include 60% stream channel design plans, as a component of the draft Mitigation Banking Instrument (MBI), with 95% design plans submitted at the final MBI phase. Additionally, as-built stream channel design plans would be submitted upon completion of earthwork. As-built plans showing wetland activities would be submitted for wetland-only banks or stream mitigation banks incorporating wetlands as a part of the bank. As-built plans would depict all other activities located outside of streams and/or wetlands which have been incorporated into the project, including, but not limited to: grading, water control structures, erosion control, etc. In order for the IRT to understand potential differences between the as-built condition, as compared to the approved MBI plans, the sponsor would provide a detailed, itemized description of the differences between the as-built plans and the plans depicted in the approved MBI, and provide a credit adjustment breakdown to account for any changes in crediting that are required. These plans would be reviewed by the IRT prior to making any credit adjustments.

Additional Tables for MBI - Appropriate accounting is an important aspect of the Mitigation Bank development process. To ensure clarity with the process of accounting and monitoring, all MBI's should contain additional tables indicating the projected functional assessment scores specific to each assessment area within the bank for each credit release. In addition, all MBI's should contain additional tables which show the projected credit distribution for each assessment area within the bank for each credit release.

Subsurface Mineral Exploration - Subsurface mineral exploration and extraction activities have the potential to adversely impact restored, enhanced, and created aquatic resources. No new leases, sales, or other contracts of mineral rights (those owned by the surface owner, if any) should occur during the mitigation bank evaluation period. Bank sponsors should provide a minerals assessment report (i.e., remoteness opinion) which assesses the minerals present on and under the land to determine the potential for future development. For any subsurface mineral rights owned by the landowner, the bank sponsor should fully and permanently retire all subsurface minerals (oil, gas, and other hydrocarbon) rights in perpetuity, or alternatively, the sponsor would commit to accessing owned resources without performing work that would affect the bank site (i.e., directional drilling). For subsurface mineral rights held by other parties, the bank sponsor should make reasonable efforts to purchase or retrieve all subsurface mineral rights. If 100% of all subsurface mineral rights cannot be acquired and otherwise retired by the bank's sponsor a Mineral Management Plan (MMP) should be developed and provided to the Interagency Review Team as part of the draft mitigation banking instrument review. The MMP should specifically identify potential areas for subsurface mineral exploration and development

activities (e.g., access roads, well pads, directional drill sites, etc.) based on the minerals assessment report. To avoid and minimize adverse impacts to aquatic resources, activities associated with subsurface mineral exploration and extraction should be limited to only those identified areas, and these areas would be excluded from creditable acreage and the Conservation Easement. For any areas associated with the MMP that cannot be excluded from the Conservation Easement, the bank sponsor should consult an experienced oil and gas attorney to draft a Surface Use Agreement (SUA) for the potential of any subsurface holder(s) to conduct exploration or extraction activities in those areas. The SUA should be provided to the Interagency Review Team for review, and once approved should be attached as an exhibit to the Conservation Easement. It should be noted that sand, gravel, and timber resources are considered surface resources which should also be retired.

MITIGATION PLAN:

Use of Reference Sites - In order to evaluate the appropriateness of proposed stream and wetland restoration/enhancement designs, and to calculate the projected ecological lift anticipated to be achieved by a mitigation site, the bank sponsor should identify potential reference sites for IRT review. The sponsor should provide, at a minimum, a TXRAM (2.0) assessment for each appropriate reference site. These reference sites should exemplify the ecological condition anticipated to be achieved at full maturity. All reference sites are to be selected using sound ecological practices. Selected sites should be similar with regard to a number of factors, including, but not limited to hydrologic regime, watershed, Ecoregion (Level III Ecoregions of Texas, Omernik 2004), soil type, landscape position, and surrounding development patterns. Data sheets, photographs, and other supporting information for the reference and mitigation project sites will be evaluated to determine if the amounts and types of predicted ecological lift are reasonable and achievable in the context of the mitigation work plan. Once approved, these sites would be used to determine the projected ecological lift of the mitigation site.

Stream Reference Reach - Proposed reference reaches should be submitted to and approved by the Interagency Review Team prior to scoring the Texas Rapid Assessment Method and other relevant protocols. Bank sponsors are encouraged to submit stream reference data early in the draft mitigation banking instrument phase and prior to substantial investment in the stream design. This will help ensure the reference reach data is appropriately reflected in the stream design. Bank sponsors should provide an ecological basis for reference reach selection that demonstrates the reference reach shares ecological characteristics similar to the mitigation site. Reference reach information to be considered should include, at a minimum, channel

geometry, depth, width, gradient, sinuosity, meander belt width, and meander belt heterogeneity, in addition to the extent to which the reference reach reflects variability in these characteristics. Other characteristics to be considered should include soil, slope, land use, substrate, sediment transport, floodplain dynamics, and condition of the riparian buffer.

Stream Credits - In order to generate in-channel and riparian buffer credits (as defined in the Fort Worth District Stream Mitigation Method, Public Notice CESWF-13-MIT-1, dated October 2, 2013), the bank sponsor must own and/or control both banks of a stream including the full required buffer on both sides of the stream, and provide documentation of ownership and/or control. The only exception would be those situations in which the opposite side of the stream is owned and/or controlled by a federal, state and/or local entity, including a 501(c) (3) organization for which the property would be protected in perpetuity through a conservation easement or long-term management plan. In addition, stream beds (channel bottom from toe-of-bank to toe-of-bank) not owned and/or controlled by the sponsor would be ineligible for any in-channel credits. However, riparian buffer credits could be generated adjacent to stream beds not owned by the sponsor. In order to make an official determination relative to potential state-owned stream beds, a determination should be obtained from the State of Texas General Land Office.

Performance Based Credit Releases - All performance based credit releases will be determined on percent survival of planted species, diversity, and invasive species criteria in addition to the predicted TXRAM (2.0), or equivalent model, scores as calculated based on ecological lift trajectory. The TXRAM (2.0) score ecological lift trajectory reflects baseline, incremental lift, and ultimate scores at maturity, plotted against time. Specifically, the score to be used as a performance standard would be the score predicted to be achieved at the end of the monitoring period. Additionally, the bank sponsor shall establish interim scores that will correspond to each scheduled credit release. In the event the actual score falls below that predicted by the bank sponsor, the monitoring period and credit release schedule would be adjusted accordingly, unless adequate justification to the contrary is provided.

Invasive Species - Exotic invasive species composition should be limited to 0% in the overstory and mid-story, and 1% in the herbaceous layer. However, for specific problematic species, justification may be considered for different requirements. Exotic invasive species composition requirements will only apply to creditable acreage within the mitigation bank. Upon identification and subsequent treatment of exotic invasive species, additional monitoring will be conducted to ensure successful control. If an invasive species is discovered and subsequently successfully treated to reduce coverage back to 0%, the bank would be considered to be in compliance with this guideline. The list to be used to identify invasive species can be found on the Texas Invasives website at: http://texasinvasives.org/plant_database/. In any case, exotic plant species, whether invasive or not, discovered within creditable acreage of the mitigation bank will be treated, with the goal of complete removal.

Forest Restoration Performance Standards - At release of monitoring, the site should support a minimum of 250 stems per acre of trees that have been planted and rooted in the ground for a minimum of five years. Eighty percent of planted tree species shall be present in year 5 (Present means each species should constitute at least 5% of the total planted stems.) Volunteer stems of approved native species may be counted toward total stem counts. No one species, either planted or volunteer, will account for more than 30% of the total surviving canopy species stems. A similar performance standard for diversity should be developed for understory species. Note that interim and final credit releases must meet stems per acre, diversity, and invasive species requirements in addition to Texas Rapid Assessment Method scores. Variations from this standard may be evaluated on a case-by-case basis and will be based on an appropriate stream reference reach, or reference wetland data commensurate to the specific ecoregion and major river basin, with other considerations including landscape position, hydrologic regime, sediment dynamics, and substrate present on-site. Additional consideration will be given to scientific literature citations supporting this approach.

Flash Grazing - Flash grazing involves short duration grazing with an appropriate number of livestock specifically implemented as an adaptive management tool to control invasive species. As part of the draft mitigation banking instrument, the bank sponsor may submit a Flash Grazing Plan. If approved and implemented, the bank sponsor would be required to submit a separate request for each flash grazing event. Grazing would be permitted to occur in buffers and wetland areas as deemed appropriate, however grazing would be excluded from all stream channels.

Use of Index of Biotic Integrity (IBI) - For in-channel work on perennial streams or intermittent streams with perennial pools, the bank sponsor will be required to use an IBI, or similar biotic assessment model, to provide biological data regarding the effects of restoration on the fish and benthic macroinvertebrate communities. At a minimum, IBI's or equivalent model shall be performed before restoration activities occur to obtain baseline data and performed again after restoration efforts. The IBI and methods for biological monitoring are described in the Texas Commission on Environmental Quality's Surface Water Quality Monitoring Procedures, Volume 2 (RG-416, June 2007). Link to procedures: http://www.tceq.texas.gov/publications/rg/rg-416/index.html.

Monitoring Requirements - Historically, mitigation banks in the district established 5 year monitoring periods, and in some circumstances, required a 7-10 year monitoring period based on the mitigation plan and associated activities. The monitoring and release of credits were tied to performance metrics.

A monitoring plan will be developed to address the specific reporting needs of each bank and may depend on a number of factors, including, the magnitude of earth work proposed, a mitigation bank sponsor's prior history of successful projects, and risk of failure. Most typically,

monitoring will occur on an annual basis for wetland, stream, and preservation banks until bank closure. Annual monitoring will be general and typically would not require a functional/conditional assessment. A jurisdictional determination and functional/conditional assessment will only be needed when tied to a credit release. All credit releases will be tied to the functional/conditional assessment which would determine the length of monitoring. If the functional lift is not obtained, credits will not be released and the bank will continue to be monitored until the ecological performance and lift for final credit release is obtained.

A monitoring report and credit ledger shall be submitted annually. Separate ledgers shall be maintained based on service area and aquatic resource type.

Irrigation and Monitoring - It is the intent of the mitigation program to ensure that all approved mitigation sites are self-sustaining in the long-term. However, on occasion, bank sponsors may choose to provide supplemental water to help ensure survival of newly planted species. Establishment irrigation performed during the first growing season after planting may be done so without the need to extend the approved monitoring period. In the event bank sponsors choose to irrigate bank sites after the first growing season, the required monitoring period shall be extended such that the first year of monitoring would begin from the time at which irrigation ceases. This requirement will help to ensure that a site's natural hydrologic conditions are sufficient to support the intended habitat type.

Monitoring Phase Jurisdictional Determination - A Jurisdictional Determination identifying waters of the U.S. will be required for the first credit release including a functional/conditional assessment and the final credit release for all schedules, including wetlands and streams.

On-Site Supervision - As part of the mitigation banking instrument, the bank sponsor shall submit for IRT approval an on-site supervision plan that ensures qualified/experienced personnel will be on-site during stream construction.

Stream Stability - When riparian planting is the only activity proposed, the bank sponsor must sufficiently demonstrate short-term and long-term channel stability. Performance standards for channel geometry and stability will be required in addition to those associated with buffer metrics.

Stream Migration Buffer - Streams subject to lateral migration may require additional buffer widths in order to ensure long-term viability of both the stream channel and its associated Texas Rapid Assessment Method buffer. Bank sponsors may propose credits appropriate to account

for expanded buffers. Credits should be based on a calculated area difference between meander buffer width and expanded buffer width not to exceed 5% of awardable riparian buffer credits.

Stream Mitigation Buffers - In an effort to ensure long-term sustainability, streams subject to lateral migration must include details on establishment and preservation of meander belt widths including the required buffer width. In the event the bank sponsor is required to increase buffer width to ensure long-term sustainability of the stream and associated riparian buffers, TXRAM (2.0) would allow the bank sponsor to generate additional credits.