# West Virginia Water Quality Nutrient Credit Trading Program

The purpose of this document is to provide guidance for the generation and trading of nutrient reduction credits in West Virginia's river basins. Nutrient reduction credits may also include trades associated with sediment related to nutrient reduction. The Department of Environmental Protection (WVDEP) allows the voluntary generation and trading of nutrient reduction credits to meet water quality requirements under applicable laws and regulations. The guidance is also intended to assist individuals through the process of submitting proposals for the approval, certification, verification and registration of credits, and to describe how nutrient reduction credits may be used to fulfill a permit requirement.

The guidance procedures herein are not adjudication or a regulation. This document establishes the framework, within which the Department exercises its administrative discretion to deviate from this guidance if circumstances warrant.

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# I. INTRODUCTION

The Department recognizes the many potential benefits of using market mechanisms to efficiently and effectively address environmental challenges by providing flexibility for the regulated community to meet legal requirements, especially when done on a watershed basis.

Water quality credit trading is one approach to improve and maintain water quality using market mechanisms to produce nutrient reductions at lower costs. Participation in the ***voluntary*** trading program is an option for point sources to provide for achievement of their environmental obligations by purchasing pollutant reductions from another point source or non point source that can more cost effectively reduce their pollutant discharge. It is also an opportunity for unregulated non point sources who desire to improve water quality (and produce other environmental benefits) to generate nutrient reductions which can be used as tradable credits and sold to others who are seeking nutrient reduction credits.

# II. DEFINITIONS:

**"Aggregator/Broker"-** *An individual or entity that can purchase, collect and compile credits from individual sources. These credits can then either be sold on the credit marketplace, or sold directly to a point source or developer.*

**"Baseline"-** *The compliance activities and performance standards which must be achieved before an entity can generate credits.*

**"Basin"** – *The three major river basins of West Virginia include the Potomac, Ohio and James Rivers and their watersheds, subwatersheds and tributaries. See "**Watershed**".*

**"Best management practice" or "BMP" -** *Structural, vegetative, or managerial practices that reduce, minimize, or prevent the discharge of pollutants to waters of the state.*

**"Certification"-** *The approval, by the Department, of credits generated by a credit development proposal as verified by the Department or a delegated entity.*

"**Conservation Plan**"- *A farm specific plan, developed by the NRCS or others, that contains information on why and where the practice is applied, and sets forth the minimum quality criteria that must be met during the application of that practice in order for it to achieve its intended purpose(s).*

**"Credit"** – *The unit of compliance that corresponds with a pound of nutrient reduction per unit time as recognized by the Department which, when registered by the Department, may be used in a trade.*

"**Credit Marketplace"** - *The credit marketplace is an on-line marketplace that facilitates exchange of nutrient credits among buyers, sellers, aggregators, and brokers by posting guidance, credit prices, the credit registry, and the credit calculator, NutrientNet.*

"**Credit Registry" -** *The Department's official system that tracks and records credits needed, generated, and traded among point sources and non-point sources.*

"**Credit Reserve**" – *Credits set aside by the Department to address natural or otherwise unexpected failure of credit generating activities.*

**"Delegated entity"-** *An entity designated by the Department to carry out specific tasks related to the Nutrient Trading Program.*

"**Department**" - *West Virginia Department of Environmental Protection*

**"DMR" or "Discharge Monitoring Report***" - The EPA uniform national form, for the reporting of self monitoring results by the NPDES permitees including any subsequent additions, revisions, or modifications, that may be necessary for the self-monitoring and tracking of credits.*

**"Non-point Source"** – *A source of potential water pollution that is not a point source.*
*Non-point source pollution, sometimes referred to as "polluted runoff", is generally caused by stormwater runoff across the land. Examples of non-point sources include, but are not limited to: agriculture, abandoned oil and gas wells, atmospheric deposition, failing on-lot sewage systems, and silviculture (forestry).*

**"NPDES"** – *National Pollutant Discharge Elimination System, the permit program required under the federal Water Pollution Control Act (also known as the "Clean Water Act"), administered by the Department.*

"**NRCS**"- *The Natural Resources Conservation Service, a division of the United States Department of Agriculture*

**"Nutrient"** – *Nitrogen, phosphorus, including sediment associated with nitrogen and phosphorus reduction..*
**"Nutrient Allocation" -** *The amount of nutrient discharge allowable by an NPDES permit.*

**"NutrientNet"** – *Web based software program created by the World Resources Institute (WRI), to provide an interface for administering the trading program by standardizing nutrient reduction calculations, establishing a credit registry and provides for tracking of credits and trades.*

**"Nutrient Balance" -** *A component of the Nutrient Management Plan that calculates the total nutrient runoff potential for all farm fields under current land use practices. Where BMPs have been installed and properly maintained the farm nutrient balance shall reflect the nutrient reductions achieved by these practices. Nutrient Net can be used to calculate the farm nutrient balance.*

**"Nutrient Management Plan (NMP)"** – *A plan to assist landholders in managing the mass balance of nutrients developed by the WV Department of Agriculture, the WV Conservation Agency, the Natural Resources Conservation Service or another Department-approved entity.*

**"Nutrient Reduction"-** *Reductions of nutrient discharges to waters or of nutrients within waters achieved by activities such as best management practices, application of wastewater treatment upgrades, and activities that quantifiably increase waters' assimilative capacity compared to the applicable baseline.*

**"Nutrient Trading"** – *Transactions that involve the exchange of quantifiable nutrient reduction credits, registered with and approved by the Department.*

**"Offset"—** *A unit (equivalent pounds) of nutrient load reduction approved by the Department that can be used by a facility to meet its NPDES nutrient requirements.*

**"Point Source"** – *For the purposes of this guidance, any NPDES-permitted discernible, confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, landfill leachate collection system, or vessel or other floating craft, from which nutrients are or may be discharged.*

*"***Permittee***" - An NPDES permit holder with nutrient discharge limits or other nutrient related requirements.*

"**Point source-point source trade***" - A trade in which the person using water quality credits and the person generating water quality credits are both permittees.*

*"***Point source-nonpoint source trade***" - A trade in which the person using water quality credits is a permittee and the person generating water quality credits is a nonpoint source.*

**"Person"-** *An individual, corporation, organization or other legal entity whose actions or activities contribute to or reduce nutrient loadings.*

**"Sediment"-** *Particles, derived from rocks or biological materials, which transport phosphorus and are suspended or settled in water.*

**"Stream Segment" –** *The portion of stream/river that flows through its corresponding watershed segment. See also: "Watershed segment".*
**"TMDL"** – *Total Maximum Daily Load, is the sum of individual waste load allocations for point sources, load allocations for non-point sources and a margin of safety expressed in terms of mass per time, toxicity or other appropriate measures.*

**"Third Party"-** *Any entity that does not discharge nutrients or create nutrient credits and that participates in the trading program to validate and/or inspect credit development proposals. This entity could include, but is not limited to, environmental groups, developers, watershed associations, aggregators/brokers, businesses, and nonprofit organizations.*

**“Trading Ratios” or “Trading Calculation Factors”-** *Discount factors applied to nutrient reductions, to account for uncertainty, delivery, credit reserve or special need concerns.*

- **“Delivery Ratio” or “Delivery Factor”-** *The factor that compensates for the natural attenuation or loss of nutrients as they travel in water.*

- **“Reserve Ratio”-** *The proportion of the credits generated by a nutrient reduction set aside in the credit reserve for the purposes of insurance against risk of nutrient reduction project failure for natural or unexpected causes.*

- **“Special Concerns Ratio”–** *Additional ratios applied to credits generated in watersheds of impaired streams (303d-listed) and otherwise as the Department deems necessary in areas of special water quality concern.*

- **“Uncertainty Ratio”–** *Ratio applied to point-to-nonpoint trades to account for uncertainty in modeling and BMP performance.*

**“True Up Period”-** *Two month period at the end of each Credit accounting year during which time permittees may obtain or secure credits needed to meet their compliance obligation.*

*“***Verification***”-The process by which the Department determines that a credit represents a real reduction in nutrient loading that is eligible for trading.*

"**Water quality trade**"- *The purchase, sale, conveyance or other transfer of a credit from one person to another person.*

"**Watershed**"- *An area of land as determined by the Department that drains to any waters of the state which may encompass a large river mainstem or any of its subwatersheds and tributaries. See “***Basin***.”*

**“Watershed Segment” –** *A hydrological-based unit of land with a numeric code or Hydrologic Unit Code, which uniquely identifies its relationship to smaller and larger watershed/basin delineations.*

# III. FUNDAMENTALS

## *A. General*

Nutrient Trading has the potential to achieve water quality and other environmental benefits more cost-effectively and generate greater economic and environmental benefits than traditional regulatory programs. Nutrient trading under these guidelines must be consistent with legal requirements under applicable laws and regulations, including the federal Clean Water Act, or CWA.

Trading in a broader watershed area must not cause localized water quality impairment. Where a TMDL is established, trading must be consistent with the TMDL and associated implementation plans, approved by the Department.

## *B. Nutrients Traded*

This guidance deals primarily with the nutrients nitrogen and phosphorus, the principal constituents determined to lead to or cause eutrophication of local and downstream waters. The Department lists certain waters overly enriched by nutrients as water quality impaired under section 303(d) of the CWA, however other waters similarly impacted may not yet have been adequately documented..

## *C. Trading Guidelines*

Trading must occur within the same basin. Trading may be limited to smaller watersheds within basins if the Department determines that greater efficiencies can be obtained for implementing a TMDL or for avoiding localized water quality impairment. Interstate trading of nutrient credits may be permissible within the same basin and in compliance with applicable state policies, rules or laws.

Trading can occur among the sources within that basin for that nutrient on the condition that the discharges covered by the trades do not exceed water quality standards nor any nutrient cap load established for the basin.

Under this guidance several principles apply throughout: (1) trades must involve comparable parameters (e.g. nitrogen must be traded for nitrogen); (2) trades must be expressed as mass per unit time (e.g. pounds per year); (3) trades can occur only between eligible parties; and (4) credits generated by trading cannot be used to comply with existing technology-based effluent limits except as may be expressly authorized by federal regulations.

## *D. Eligibility*

Trading may take place between any combinations of eligible point sources, nonpoint sources and approved third parties such as credit aggregators/brokers. Both public and private entities are eligible to participate. Each credit generating entity must meet the

applicable baseline requirements described below before credits can be certified, registered and sold.

## Baseline Levels

All sources must meet baseline requirements before additional nutrient reductions will be considered eligible for credit development and trade by the Department. This applies to those activities and performance standards associated directly or indirectly with the pollutants being traded. More restrictive limits may apply if a TMDL is established, as discussed in section K of this guidance.

For most point sources to be eligible to generate credits, the baseline is the more restrictive of any technology based or water quality based effluent limitation or cap load allocation over the applicable time period, expressed in an NPDES permit.

MS4 related urban point source reductions must first achieve "maximum extent practicable" compliance with MS4 NPDES permit requirements to be eligible to generate credits from additional reductions.

Where a numeric effluent limitation is otherwise not applied, the permittee is similarly obligated to meet the applicable management requirements to the maximum extent practicable. The discharge must therefore be in compliance with any expressed baseline requirements or management requirements in order to generate tradable credits of nutrient reductions.
For non-point sources, baseline is the set of regulatory and or trading program requirements applicable to the credit generator:

### Agriculture

Currently, WV does not have sector specific regulatory control requirements applicable to agricultural non-point sources. At a minimum, a current nutrient management plan must be developed before credits can be generated. Any additional baseline requirements will be calculated and applied on a basin by basin basis to reflect the specific trading and watershed situation. Case-by-case requirements may be imposed on agricultural operations in areas where runoff impairs surface water quality or where groundwater is declared to be at risk.

### Forestry

Forestry practices must first comply with W.V. Code 19-1B-5 before credits can be generated.

### Other

Other sectors must also meet the established baseline requirements such as nutrient treatment on septic tanks

## *E. Process for Generating, Approving and Tracking Credits*

The Department is responsible for approving and tracking all credits. A credit generation practice must be approved, and trades must be registered, by the Department under this process before they can be used for NPDES permit compliance.

The Department, or its delegated entity, will use the following elements in its process of approving and tracking the generation and use of credits in the trading program. The process is summarized in the process chart following this section.

### 1. Farmland and Open Space Concerns

The Trading Program is not intended to accelerate development of productive farmland or open space. Therefore, credit generation for converting farmland into commercial, industrial or residential developments even though the conversion may result in a reduced nutrient load is not encouraged.

The Department does, however, recognize that farmland and open space will continue to be converted to alternate land uses and does encourage and supports the use of sustainable development principles. Therefore, where an investment is made in land development or redevelopment which yields nutrient load reductions beyond traditional development practices or existing conditions (due to implementation of green infrastructure, low impact development, and smart growth practices above and beyond federal, state, county or local legal development requirements) the Department will, on a case by case basis, accept and review proposals for generation of nutrient credits. In scenarios of development of farmland or open space, credits can only be generated from the difference between the enhanced and the traditional/baseline development practices for the same category of land use.

### 2. Calculation of Credits

All credit generation calculations must be approved by the Department.

**a) Basic calculation.** The Department will provide a pre-approved calculation methodology for estimating available credits from various BMP applications. For example, the pre-approved credit calculation methodologies and calculation tool for nutrient trading in the Potomac basin is WV NutrientNet as described in Appendix A. The Department will also consider other scientifically-based calculation approaches.

For non-point sources generally, the Department expects that proposals will contain scientifically-recognized methods to demonstrate nutrient reductions (e.g. methods employed by NutrientNet).

Credits must be expressed in terms that correspond to the unit of compliance (e.g., pounds), and a time period, all specified in the applicable permit discharge limits.

For example, credits will be expressed as pounds per year, and will be valid for one year or longer dependent upon Department approval.

This means that credits need to be measured, verified and accounted for according to the approved time period. For example, if a BMP has a longer lifespan than a year, credits can be generated for the life of the project but may need to be re-verified and must be accounted for each year. This can be accomplished through a request to the Department or through the Department's own initiative. Proposals to generate credits must include adequate provisions for verification throughout the credit generating life span of the project.

Groups of credits for discrete nutrient reduction activities will be assigned a unique identifier by the Department, and will have a "shelf life" of one calendar year.

Credits cannot be banked for future years. For example, if a BMP generates 100 credits each year and has a life span of five years, 500 credits cannot be applied to a permit in year five. Credits must be applied in the year that they are generated.

**b) Application of trading ratios or credit calculation factors**. Nutrient reductions must be calculated in a manner that accounts for factors such as location, reserve/risk, uncertainty, and/or other special needs. Trading ratios need to be considered and used as appropriate to ensure that trading provides the desired level of nutrient reductions and water quality benefits. Examples of ratios that would apply to trades are provided below and their specific application to the Potomac program is explained in Appendix A.

***Delivery Ratio*** is a function of the distance from the location where the nutrient reduction activities are carried out, to the compliance point and the related estimated diminution of the effect of the nutrient reductions between upstream and downstream points.

***Reserve Ratio*** is applied where the Department determines that it is necessary to provide for possible failures in nutrient reduction efforts.

***Uncertainty Ratio*** can be applied to point-to-nonpoint trades to account for uncertainty in modeling and variation in BMP performance.

***Special Concerns Ratio*** – Additional ratios may be applied to credits generated in watersheds which the Department deems to be of special water quality concern such as those with impaired streams (303d-listed) and otherwise as the Department deems necessary.

## 3. Guidelines for Proposals to Establish Reduction Credits

**a) General.** All credits generated in this program must be based on proposals reviewed and approved by the Department.

**b) Elements Needed for Potential Credit-Generating Projects.** The general information normally required for credit proposal submittals is outlined below. Credit certification application forms tailored to specific trading programs will be made available by the Department. To ensure accuracy the Department or third party will assist the applicant, when necessary, with supplying certain of the following information.

***1)Credit Generator Information***

Credit Generator/Producer
Generator Type
Name of Responsible Party
Phone Number/Email of Responsible Party
Generator Address
Generator County and State
Generator Zip Code
Latitude and Longitude
Receiving Stream

***2)Watershed Information***

Watersheds and Watershed Segment Number for the trading proposal.
"Designated use of the receiving water" (e.g., cold water fishery) and any listed impairments.

***3)Current Practices/Baseline Information***

Current land use
Currently installed BMPs
Eligibility information
Date practice implemented/completed
BMP units (acres, feet)

***4)Credits to be Generated Information***

Point or Non-point
Reduction Description
Area of Reduction
Nutrient Reduced
Nutrient Source
Ratios Applied
Credit Calculation Method
Project Lifespan

*5)Restrictions*

Identify if a funding source that was used to pay for a nutrient reduction activity restricts or limits in any way the sale or income from credit generation.

*6)Verification*

Describe the method of verification (e.g., records of BMP implementation, nutrient application and crop yields to be maintained by the landowner). Verification may be defined for a trading program or tailored by situation.

*7)Risk mitigation plan*

Describe the plan to manage any potential risks of BMPs failure.

*8)Previous efforts*

Indicate if any preservation/conservation easements exist on lands where credit generating BMPs are to be implemented.

*9)Ancillary benefits*

List any known or anticipated ancillary local benefits that may result from the implementation of the nutrient reduction activity (e.g., source water protection, trout habitat restoration/protection, stormwater flow management, green space protection, green house gas (GHG) reductions, etc.).

*10)Credit-Submitting Entity Information*

Submit name, address and contact information for the submitting entity if the proposal is submitted on behalf of the credit generator.

*11)Operation and Maintenance Information*

Include a plan to ensure that the practice will be properly operated and maintained for the life of the credit.

## 4. Proposal Review

**a) Proposal Review Process.** Proposals will be reviewed by a panel of selected experts, approved by the Department, for technical acceptability, and consistency with program guidelines. For example, for reductions at agricultural operations, experts may include representatives from the West Virginia Conservation Agency, WV Department of Agriculture, and the USDA Natural Resources Conservation Service (NRCS). The Department may identify additional experts as needed. The Department shall make every effort to provide a response to the proposal within 60 days.

**b) Proposal Approval.** Following proposal review, the Department will respond in writing to the applicant with its determination.

If a proposal is not approved, the response will include the basis for disapproval such as why the proposed activities will not generate the requested reduction credits and/or what additional information may be needed for further consideration of credit certification.

The Department will provide public notice of complete proposals for credit generating activities. Approvals of credits and trades of credits will be posted on the Department's Nutrient Trading website including any applicable on-line marketplace (e.g. NutrientNet).

## 5. Verification

**a) General.** Every proposal for use of credits must include a credit sale or purchase agreement which contains a plan for inspecting and verifying the nutrient reductions by a qualified and approved third party professional. The inspector shall have the education, knowledge and experience to determine if the control is properly installed, operated and maintained to achieve the nutrient reductions approved and certified by the Department.

In addition, the Department will use a combination of record keeping, monitoring, reporting, inspections, self-certifications, and compliance audits to further ensure that the credit-generating obligations are being met. The Department may also conduct inspections of credit generating projects, and the applicant's verification activities, to ensure certified practices and activities are being implemented and properly operated and maintained.

**b) Baseline verification.** The Department will verify that the generator of the credits meets the baseline requirements of the trading program. This may involve a site visit by Department staff or a delegated entity, self-verification by the generator of the credits by means of a process established by the Department, or a combination thereof. This step must occur before credit approval.

For agricultural operations, baseline compliance will be verified through a site visit or by review of applicable plans such as a Nutrient Management Plan, Erosion and Sedimentation Control Plan, Conservation Plan, Manure Management Plan, or a combination thereof as required by the specific trading program and any applicable requirements. Compliance must be verified by the Department, a Conservation District, or other entity approved by the Department.

**c) Nutrient Reduction.** The Department, and the generator of the credits, will have a process to verify that the reduction efforts have occurred as planned. The types of verification will depend upon the individual project

proposal. Verification may occur at any time during the life of the credit attributed to a particular activity. Examples of verification methods which can be approved for use by project applicants include engineering plans (if appropriate), photographic documentation of the installed BMP or receipts confirming BMP activities, such as documentation showing the results of a truck that was weighed to haul manure/litter.

**d) Operation and Maintenance.** The Department, and the generator of the credits, will have a process for verifying that the operation and maintenance of any nutrient reduction effort is being implemented as planned. The verification process will depend upon the individual project but will be outlined in the credit proposal.

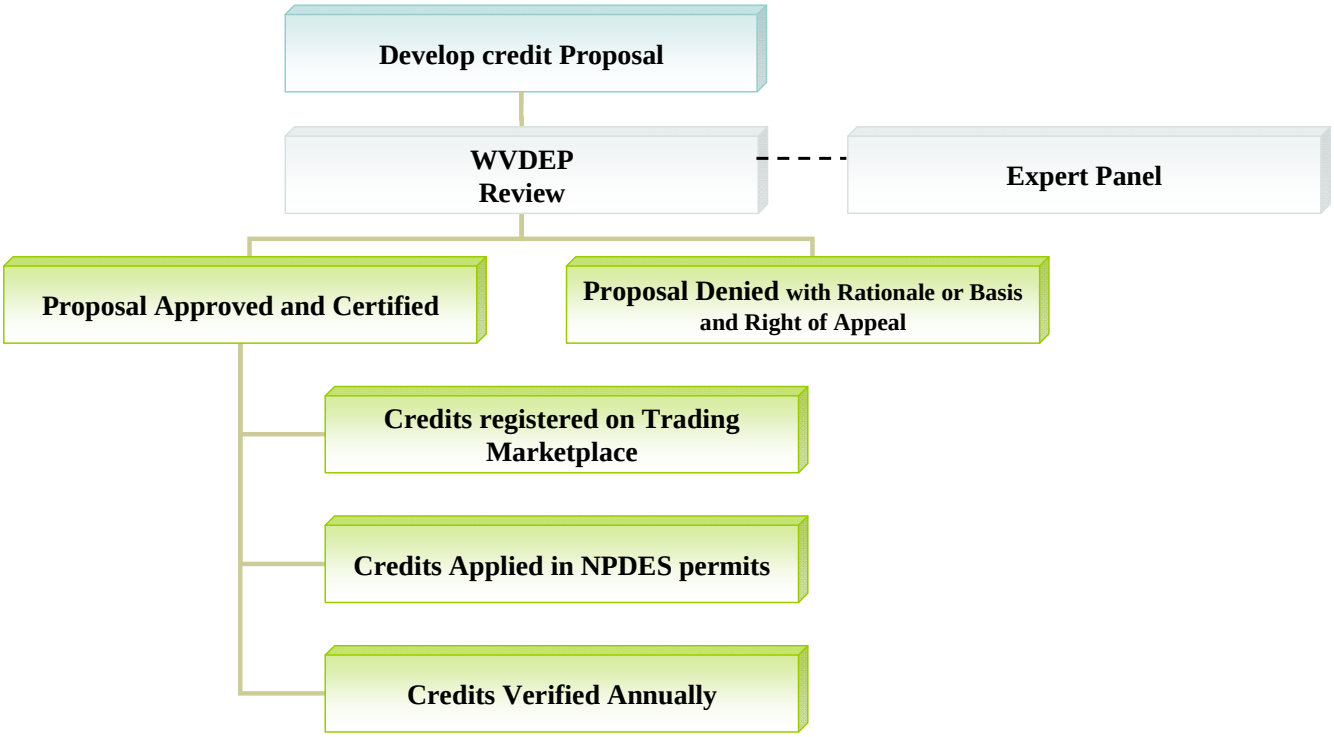
**e) Other.** The Department may allow qualified and approved third parties to perform verifications on behalf of the Department. For a third party to qualify to verify credits, the Department requires that the party:

- Have the necessary qualifications to perform the verification (e.g. a certified nutrient management planner, technical service provider, soil scientist, conservation planner, registered professional engineer, etc.);
- Provide potential trading partners with information on the program;
- Calculate credits based on the Department's trading guidance;
- Accurately provide the Department with the information listed in the Elements Needed for Potential Credit-Generating Projects;
- Confirm in writing that the activities intended to generate credits have occurred or are scheduled to occur prior to the end of the calendar year.
- Not be in a position to profit directly or indirectly from sale or purchase of credits; and
- Confirm in a certified written statement that the credit-generating entity meets all trading program criteria.

## 6. Registration and Tracking

**a) Registration and Tracking.** Trades must be registered before the credits can be used to meet permit limits. The Department will operate an on-line marketplace tool (e.g. NutrientNet) that will assist with the calculation, registration, tracking and application of credits. The registration system will be used by Department staff when credits are proposed to be used in a NPDES permit. The registration system may also be used by buyers and sellers to determine whether credits are available and to verify that their trades have been approved by the Department.

# PROCESS CHART FOR GENERATING, APPROVING AND TRACKING CREDITS




## *F. Use of Credits in NPDES Permits*

NPDES permittees are authorized under this program to use registered and certified credits to achieve compliance with permit effluent limits under the following conditions:

- Permittees are responsible for ensuring that the credits they obtain and apply to their permits for compliance purposes are approved by the Department (i.e., are certified and registered by the Department).

- Permittees must report in the Discharge Monitoring Reports (DMRs) or in another acceptable form the number of credits that are being applied to achieve compliance with their permit limits.

- Permittees are responsible for assuring adherence to the terms of their credit purchase agreements. Where credits have been procured through a Department-approved broker/aggregator, it becomes the responsibility of this agent to ensure the credit supplier abides by the purchase agreement. Where a credit supplier fails to comply with a contractual agreement resulting in noncompliance with the permit, the Department may decertify the credits in question. Permittees can acquire supplemental credits, or in the case of a Department-verified case of credit loss from natural disaster or other unforeseen/uncontrollable causes, credits could be obtained from the credit reserve pool.

The Department may exercise enforcement discretion with respect to permittees in the year in which credits are determined to be invalid, as long as (1) the credit failure is not due to negligence or willfulness on the part of the permittee and (2) the permittee replaces the credits in a "true up" period.

## *G. Use of Credits to Offset New and Expanding Discharges*

When applicable, in accordance with nutrient reduction requirements of the relevant facility NPDES permit, permittees are required to obtain credits to offset all nutrient loadings from all new or expanded sources.

## *H. Public Participation*

The Department will operate a transparent system for review and approval of credits by providing notice to the public and for comment on the use of trading in permits as part of routine procedures followed with all NPDES permit actions and as required under the regulations governing NPDES permits.

The Department will make reference in the public notice of any trading proposal in the draft permit or in any required necessary major modification of the permit.

DMRs and/or other Department approved forms are records that can be accessed by the public. The information in these documents must include unique identifiers and the numbers of credits purchased. More detailed information about the credits can then be accessed from the Department's Nutrient Trading website.

An inventory of credits developed, credits available and credits transacted is public information and will be published on the Department's Nutrient Trading website and the on-line marketplace (NutrientNet).

## *I. Ensuring Program Integrity and Managing for Success*

The Department recognizes that there are factors of uncertainty and risk in the ultimate success of nutrient reductions that are to serve as the basis for tradable credits. This uncertainty and risk will be addressed in several ways:

a) We have established in this guidance that a baseline is necessary before you can trade. Uncertainty is accounted for in the calculation of ratios applied to point-to-nonpoint trades.

b) **Conservative assumptions.** The Department will use conservative assumptions and methodologies for calculating credits. In the Potomac, these assumptions have been employed within NutrientNet credit calculation methodologies (see Appendix A). The Department will continue to confer with experts in agronomics and other specialized areas in order to employ the best available science when applying its credit calculation protocols.

   Where appropriate, trading ratios will be applied to account for uncertainties inherent in estimating the delivered loads and reductions in the absence of daily site or stream monitoring and other cost-prohibitive measures. Despite

conservative estimation methodologies, remaining uncertainty can include but is not limited to estimating the effect of temporal, spatial, and water quality factors specific to reductions that cannot be captured by models and methodologies - these uncertainties can include the variation in annual/seasonal weather, in the fields and crops, in human practices, in receiving streams, in the estimation of past loadings, and in the equivalency of various forms of pollutants (e.g. bound vs. biologically available phosphorous).

c) **Reserve Ratio.** The Department will adjust all load reductions available for credit generation to populate an annual risk reserve of credits to be used in the event of natural or otherwise unforeseeable/uncontrollable causes of project failures.

d) **Verification.** The Department and/or its agents retain the right to conduct audits or verifications of baseline and reduction activities/technologies. The Department will also require a level of monitoring and verification of the point sources using credits for permit compliance, or their agents, to ensure the integrity of credit generating activities. Sampling and other monitoring will be conducted where/when appropriate.

   For instance, the Department regularly conducts water quality monitoring at monitoring stations throughout the state, and this data can be used to assist in the evaluation of any impacts from use of trades in NPDES permits. It should be noted that the data derived from water quality monitoring sites within the Chesapeake Bay drainage area is provided to the EPA Chesapeake Bay Program to help calibrate the model and evaluate changes in nutrient loadings over time.

e) **Transparency**. A registry of credits generated and verification records will be maintained and made publicly available as part of the NPDES permit process.

f) **Other.** The Department will evaluate this trading program at least every five years or more frequently if the Department deems appropriate. Based on these reviews, the Department may determine program enhancements are needed and the appropriate changes can be made. These may be shown on the Department's Nutrient Trading website. Stakeholder input will be obtained prior to the changes, as appropriate.

## *J. Program Organization*

Trading programs will be a joint effort between the Department and a Department-approved trading program management organization (e.g., Conservation District staff).

**a) Credits** will be approved and certified by the Department through consultation between the Division of Water and Wastewater Management and additional experts as appropriate.

**b) Verification** may be coordinated by the Department, the buyer, and or an aggregator/broker but in most cases will be conducted by the approved trading program management organization.

**c) Registration** of credit generation approvals and trades will be managed by the NPDES Permitting Office, in coordination with the approved trading program management organization.

**d) Registration and use of credits** in permits will be managed by the NPDES Permitting Office.

**e) Public participation** during the permit process will be the responsibility of the NPDES Permitting Office.

## *K. Water Quality and TMDLs*

Trading will be allowed only where water quality will be protected and maintained as required by applicable regulations.

**a) TMDLs.** Once a TMDL is approved by EPA, any load allocations and individual waste load allocations established by the TMDL to meet local water quality standards apply. This may mean that adjusted "baseline" requirements must be implemented before credits can be generated. Trading will be consistent with the assumptions and requirements upon which the TMDL is based.

**b) Antidegradation.** Trading will be consistent with the antidegradation requirements contained in Department regulations.