

THE TREATMENT ROOM



Water treatment specialist Judith Herschell examines opportunities and areas of uncertainty in nutrient credit trading.

The emerging nutrient credit market

Nutrient credit trading (NCT) is a form of buying and selling credits earned from reducing the nutrient (nitrogen or phosphorus) concentration within a watershed. Credits are generated by implementing techniques that remove nutrients to a level greater than that required. In 2010, the EPA documented approximately 50 water quality trading programs in various stages of development. The primary driver for creating nutrient credits is to sell them to other dischargers, enabling the buyer to meet its nutrient reduction obligations more cost effectively and generate revenue for the seller to offset the cost of remediation. A secondary driver is the reduction in compliance costs regarding stormwater regularity requirements.

NCT, a market-based program, offers an alternative to traditional practices and/or technologies to meet nitrogen and phosphorus limits. Increased efficiency and cost-effectiveness are realized as market forces determine the cost of credits. Trades can take place between discharges in several ways, including point source to point source (typically wastewater treatment plants), point source to non-point source, such as a wastewater treatment plant and a farming operation, and non-point source to non-point source, such as farming and stormwater sites. The magnitude of the opportunity has yet to be determined. It is anticipated that the majority of trades will involve a non-point source since the bulk of sources are of this type. For example, in the Chesapeake Bay watershed, over 80 percent of the nutrient content is attributable to runoff from agricultural and other non-point sources.

For a fully functioning credit exchange system, at least three entities are involved, including a clearing house that buys and sells credits, a certifying body that validates and registers credits and a credit auction manager and register of buyers and sellers.

Credits may be generated in a variety of ways, including:

- Retiring a sewage disposal system and connecting to an advanced treatment facility
- Upgrading a treatment plant with Biological Nutrient Removal (BNR) or Enhanced Nutrient Removal (ENR) technologies
- Retiring a facility and treating the water at a BNR or ENR facility
- Land application with nutrient management controls
- Land use changes, such as crop conversions
- Agronomic practices, such as cover crops, reduced fertilizer application, riparian buffers, livestock fencing, etc.

NCT offers an advantage as it provides the opportunity to reduce the cost of meeting total maximum daily load (TMDL) targets, assists in permit compliance, and allows for future growth. NCT

can incentivize and accelerate non-point source projects that otherwise would not be undertaken.

As with any emerging market, there are areas of uncertainty. At this early stage, there are myriad factors yet to be resolved, including:

1. Will demand for trading meet expectations?
2. Are mechanisms for monitoring discharges and measuring compliance accurate?
3. How certain are trading outcomes involving non-point sources?
4. How well defined are Best Management Practices (BMPs)? How are BMPs used to determine nutrient credits? Are BMPs consistently applied across a watershed?
5. How are credits assessed for long-term solutions, such as riparian buffers and stream fencing, versus shorter-term solutions, such as cover crops?
6. Are credits retired to produce additional water quality improvements?
7. How are nutrient credits valued that result from non-traditional nutrient trading sources?
8. What are transaction costs to ensure accountability, transparency and verifiability?
9. Is it acceptable to trade across state boundaries within a given watershed?
10. What are the social and political factors in NCT between rural and urban areas?
11. What is the legal liability from non-point credits if they don't achieve or maintain pollution reductions?
12. What do the new stormwater rules mean for the NCT systems?

NCT is a complex and evolving market. While the opportunities presented by NCT are promising, expectations for trading should be tempered by recognizing the significant uncertainty. Further development is required before market stability can be reached. The expansion of nutrient credit trading, especially as more non-point and non-traditional sources become involved, must be done with water quality as the paramount objective. The next era of NCT offers possibilities for innovation and private sector opportunities. Industry decision-makers must keep the overarching goal of improved water quality at the forefront.

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