Accounting for Uncertainty
EPA Draft Technical Memorandum

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Presentation Outline

- Overview of Uncertainty Technical Memorandum Contents
- Safeguards in Offsets and Trades
- Purpose of Accounting for Uncertainty in Offsets and Trades
- Causes of Uncertainty

Overview of Uncertainty Technical Memorandum Contents

- Safeguards in offsets and trades
  - Purpose of accounting for uncertainty

- Causes of Uncertainty
  - BMP effectiveness
  - Accounting for meteorological factors in runoff amounts
  - Failed credit generation
  - Point source uncertainties
  - Monitoring incentive for decreasing uncertainty
  - Verification and assessment

Safeguards in Offsets and Trades

- Safeguards necessary to ensure that credits generated result in actual pollutant reductions.
- Safeguards generally take the form of ratios that require pollutant reductions in amounts greater than those that would otherwise be needed.
- Four different types of safeguards – divided into ratio categories with separate, unique policy goals, are listed below:
  - Location adjustments—account for different locations between the credit generator and buyer.
  - Pollutant type—accounts for various exchanges between nitrogen and phosphorus or different forms of the same pollutant (e.g., phosphate and total phosphorus).
  - Water quality improvement—sets aside a portion of credits for improving water quality.
  - Uncertainty—accounts for variability or the unknown in the calculation of credits used for offsets or trading.
- Uncertainty Technical Memorandum (TM) focuses on the fourth ratio category

Purpose of Accounting for Uncertainty in Offsets and Trades

- To prevent total nitrogen, sediment, and phosphorus loads from increasing when an expected load reduction fails to be realized.
- CBP Watershed Model
  - Incorporates BMP effectiveness values derived from Simpson & Weammert
  - Provides unbiased and realistic estimates of loads
  - Does not provide conservative estimates
  - Need to account for management uncertainty due to monitored v. modeled loads and annual hydrologic variability

Accounting for Uncertainty

- BMP effectiveness
- Meteorological factors in runoff amounts
- Failed credit generation
- Point source uncertainties
- Monitoring incentive for decreasing uncertainty
- Verification and assessment

BMP Effectiveness

- BMP effectiveness taken into account through CMP expert panels
  - Operational conditions
  - Implementation date and time to maturity
  - Natural condition variation
- Discounts produced unbiased and realistic BMP effectiveness values for over 130 BMPs
- Effectiveness values widely used across CBP
- Therefore, no need to add uncertainty factor for BMP effectiveness

Meteorological Factors

- Uncertainty ratio designed to address two sources of uncertainty:
- Monitored v. Modeled loads
  - Point sources: routinely monitored and load reductions relatively certain
  - Nonpoint sources: typically modeled estimates that introduce uncertainty
- Hydrologic uncertainty
  - WSM uses constant 10-year simulation hydrology
  - Rainfall may affect point sources, but measurable and monitored loads allow for easy credit calculation
  - Timing and intensity of rainfall events introduce variability in BMP effectiveness for nonpoint sources

Meteorological Factors (cont.)

- To account for uncertainty generated by assuming average hydrology, EPA expects an uncertainty ratio equal to or greater than 2:1 be applied to transactions involving credits generated by nonpoint sources

- Additionally, to ensure that there is consistency in the credit calculation and that the amount of credits available for use is clear to buyers when applying an uncertainty ratio, EPA expects that the uncertainty ratio will be applied at the point of credit generation rather than at the point of sale

Failed Credit Generation

- Examples:
  - Cover crop fails to grow
  - Grassed waterway washes out
- Ultimately, the permit holder is held accountable for meeting the permit by enforcing the written record of the transaction
  - Accountability and tracking provision of Appendix S of TMDL includes information on documenting agreements between parties
- Reserve ratio is not a substitute for an uncertainty ratio

Point Source Uncertainties

- EPA expects jurisdictions to apply an uncertainty ratio of at least 1:1 for point source to point source transactions (offsets or trades) where point sources are directly and representatively monitored
- Jurisdictions may reduce 2:1 ratio for nonpoint sources:
  - Where direct and representative monitoring of a nonpoint source is performed at a similar level as is performed at traditional NPDES point sources,
  - There is a consistency in operation and direct and representative monitoring of the nonpoint source, and
  - Provided the jurisdiction can demonstrate through monitoring data that adoption of a 1:1 ratio is justified in such circumstances."
  - Ratio can be no less than 1:1

Monitoring Incentive for Decreasing Uncertainty

- If a Bay jurisdiction is not able to directly monitor discharges, an uncertainty ratio of at least 2:1 should be applied
- Where uncertainty can be decreased substantially, the uncertainty ratio may also be decreased, although in no event should the ratio be lower than 1:1

Verification and Assessment

- Verification assures that a practice was installed according to a standard
- EPA expects the Bay jurisdictions to have a comprehensive system in place for credit verification whereby BMPs are routinely evaluated to ensure that they are installed, performing and maintained as designed
- Presence of verification or assessment program does not negate the expectation that an uncertainty ratio is utilized