Coagulant-Enhanced Stormwater Ponds

WATERSHED TECHNICAL WORKGROUP MEETING

DECEMBER 7, 2023

Coagulant Proposal Background

- April 2023 presentation from Hampton, VA on use of aluminum coagulants to enhance pond performance
- Seeking increased removal rates for total phosphorus (TP), total nitrogen (TN), and total suspended solids (TSS), via an adjustment to the existing method for stormwater retrofits
- Draft white paper developed
- USWG Voted to Proceed with BMP Interpretation of a Retrofit

The BMP Interpretation Policy - Process

- CSN convened a team to review the white paper that was developed by the proposers
  - The goal was to catch any issues, request any additional information or clarifications, and make sure the recommendations reflect best available science.
  - Convened over two calls to answer questions and provide comments on the draft white paper
  - Report was approved by the USWG by consensus on November 21, 2023

Table A-1. Review Team	
Name	Affiliation (role)
Kate Harris	City of Boise, ID
Mark Heidecker	City of Tallahassee, FL
David Vlasin	Ramsey Washington Metro Watershed District, MN
Eric Korte	Ramsey Washington Metro Watershed District, MN
Andy Erickson	University of Minnesota
KC Filippino	Hampton Roads Planning District Commission (USWG Representative)
Norm Goulet	Northern Virginia Regional Commission (USWG Chair)
David Wood	Chesapeake Stormwater Network (USWG Coordinator)

Proposal Overview

Definition:

CET systems can be added to an existing wet pond or can be constructed as a new BMP and involve adding a common flocculent (aluminum coagulants) to stormwater/surface water which forms precipitates to trap total phosphorus (TP), total nitrogen (TN), and total suspended solids (TSS). CET is a flow-through treatment system with a shorter design residence time than a traditional stormwater pond. The amount of pollutant removal credit is based upon the design rain event depth.

Key Qualifying Criteria

- Minimum settling pond pool volume residence time for floc settling shall be based on jar testing times plus a safety factor
- Additional settling pond PPV shall be provided for consolidated floc storage
- Aluminum coagulants shall be used and must be produced by a reputable company with minimal impurities and be NSF/ANSI/CAN 60 certified for use in potable water treatment.
- Laboratory Jar testing is required to establish aluminum coagulant dosing, time for floc settling, raw and treated water lab results for contaminants of concern
- Automated shutoff of coagulant feed when flow exceeds peak design flow rate
- Mandatory safeguards (alarms and automated shutoffs) based on factors including coagulant metering, discharge, pH, and pump health

Qualifying Criteria

- If state regulations allow their use, the system must follow all state-specific requirements (e.g., permitting, type of chemical, monitoring), even if these requirements are more stringent than those outlined in this memo.
- Allowing the use of coagulants for enhanced pollutant removal efficiencies and for MS4 restoration credit is at the discretion of each state. MS4 jurisdictions must contact the state MS4 administrators to discuss individual projects

Pollutant Removal Credit

Practice Name	Design Rain Event Depth (inches)	TP Removal (%)	TN Removal (%)	TSS Removal (%)
Coagulant Enhanced Treatment Ponds 1	1.0	75	40	79
Coagulant-Enhanced Treatment Ponds 2	1.25	79	42	84
Coagulant-Enhanced Treatment Ponds 3	1.5	81	43	86
Coagulant-Enhanced Treatment Ponds 4	2.0	83	44	88
Coagulant-Enhanced Treatment Ponds 5	2.5	85	45	90

Q4. What do jurisdictions need to report to NEIEN in order to receive reductions for CET practices?

A4. For CET credit, jurisdictions will need to report the following to NEIEN:

- *BMP Name*: Practice Name (Ex. **Table B1**)
- *Measurement Names*: Total Acres Treated (Acres) by the wet pond on which the CET system is located
- *Geographic Location:* Qualifying NEIEN geographies including: Latitude/Longitude; *or* County; *or* County (CBWS Only); *or* Hydrologic Unit Code (HUC12, HUC10, HUC8, HUC6, HUC4, State (CBWS Only)
- *Date of Implementation:* Year installed
- *Land Uses:* Turf Grass; Roads; Buildings and Other; Tree Canopy over Turf Grass; Tree Canopy over Impervious

If you have a wet pond that is retrofitted to include a CET system, this record would replace your existing BMP. Report the new CET practice as described in A3 above.

Maintenance and Verification

Weekly operation and maintenance are essential to maintain the performance of CET retrofits over time. Specific maintenance tasks for CET retrofits depend on the design, project components, and operations.

Regular monitoring, parts replacement, and periodic floc removal are required to ensure proper function of the systems

Q7. What is the credit duration for CET practices?

A7. Because of the importance of operation and maintenance, the duration of CET credit is 5 years. The credit can be renewed for the next 5-year period with a field inspection demonstrating that the CET is in good condition and is functioning as designed. Every 5 years CET credits need to be renewed.

Review and Decision

Decision will be requested at the next WTWG meeting (January or February, depending on workgroup schedule)

Questions??