## **Evergreen StormH2O**

PO BOX 18912 • Spokane, Washington 99228 • (509)995-0557

## **MEETING MINUTES**

- **Project:** Stormwater Particle Size Distribution & Implications for BMP Effectiveness
- **Meeting Topic:** TAC Meeting #2
  - **Date & Time:** 9:00 to 10:00am 9/7/22
    - **Location:** Microsoft Teams

## Attendees: Technical Advisory Committee

- Erika Shaffer, Department of Natural Resources
- Dana DeLeon, City of Tacoma
- Michael Henao, City of Pasco
- Carla Milesi, University of Washington

### **Evergreen StormH2O Team**

- Aimee Navickis-Brasch
- Taylor Hoffman-Ballard
- Mark Maurer
- Patrick Volsky

## **Key Discussion Topics**

#### TAC suggestions:

- The Phase I Permit Section S8E data Permittees had to do testing on two BMPs and their data is on the international BMP data base. Phase 1 has to do two different BMPs.
- Did WSDOT have to this testing similar to S8D or E? If so they may have useful data we can look at.
- Consider looking at Phase I Permit Section S8D Outfall Data to see if it would be helpful. Carla will send the data, there is 48,000 data points.

#### **Next Meeting**

• Erika will send out a doodle poll early next year for TAC meeting #3.

1/5/2023

# Stormwater Particle Size Distribution & Implications for BMP Effectiveness

TAC Meeting #2

December 6, 2022

## **Presentation Overview**

- Welcome
- Review Project Goal & Scope
- Review Work Complete
  - D2.1 Synthesis of Literature
  - D2.2 List of Data Sources
  - D2.3 Data Summary Tables
  - D3.1 White Paper Outline
  - D3.3 Draft White paper
- Review Instructions
- Next Steps
- Action Items

1/5/2023

# Welcome



#### **Technical Advisory Committee**

Erika Shaffer, Department of Natural Resources Dana DeLeon, City of Tacoma Michael Henao, City of Pasco Ani Jayakaran, Washington State University Carla Milesi, University of Washington Ben Stryker, City of Des Moines

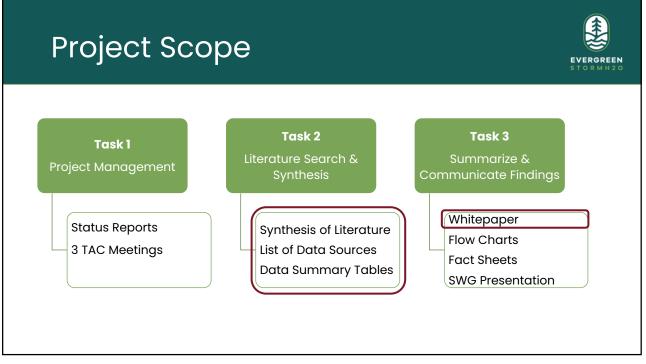
#### Evergreen StormH2O Team

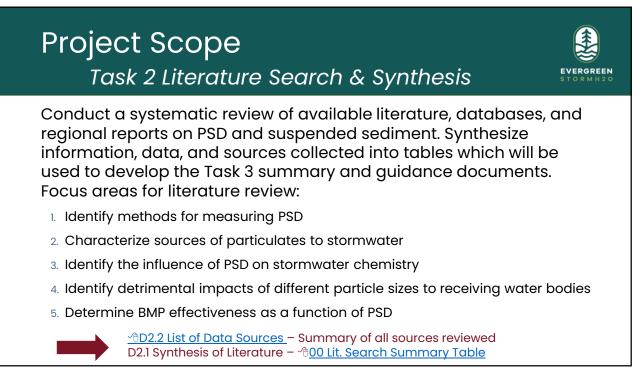
Aimee Navickis-Brasch, PhD, PE Taylor Hoffman-Ballard, PE Mark Maurer, PE, PLA Patrick Volsky, EIT

# **Project Goal**

Evaluate how pollutant types and loads vary with particle size and summarize the pollutant removal mechanisms and effectiveness of a range of BMP types to develop guidance that will assist permittees towards selecting the most effective BMP for their site based on the anticipated particle size distribution (PSD).

- Does PSD Matter? If so, where/why does it matter?
- What are options for measuring PSD besides TAPE method that could provide comparable results and are more readily available?
- What BMPs are effective for reducing specific particle sizes and where should they be located?
- · What are approaches for applying this information?





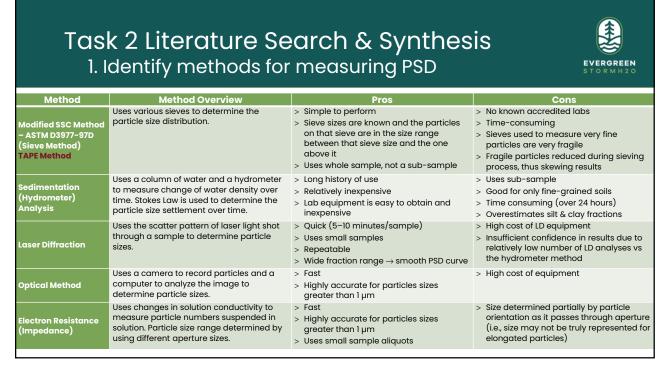
## Task 2 Literature Search & Synthesis 1. Identify methods for measuring PSD

• **Goal:** Identify/compare testing methods for measuring PSD and suspended sediment concentration (SSC) of TSS; recommend methods that maybe more readily available than TAPE method.

## • Summary of Findings:

- o 27 articles were located
- o 14 articles described details about testing methods
- o PSD & SSC testing methods identified:
  - 4 routinely used in water
    - Includes TAPE method
  - 1 alternative method for soil samples

D2.1 Synthesis of Literature – <u>HO1 Methods for Measuring PSD</u> D3.4 Draft Whitepaper – <u>HPSD Test Methods</u>



## Task 2 Literature Search & Synthesis 1. Identify methods for measuring PSD

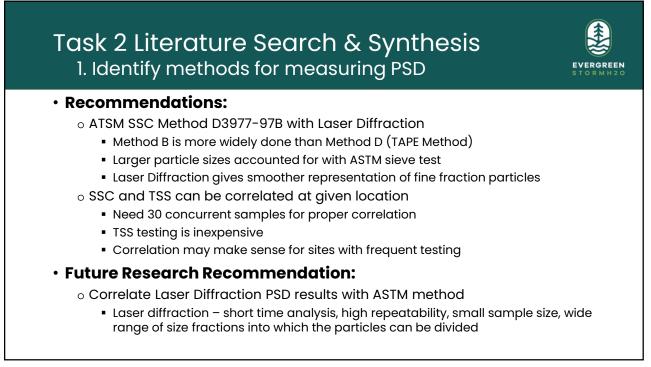


Test Method	Overall Score	Repeatable Results	Detection Levels
Modified SSC Method – ASTM D3977- 97D (Sieve Method) TAPE Method	***	**	***
Sieve Method ASTM SSC Method D3977-97B	**	**	**
Sieve Method EPA's TSS Method 160.2	**	**	**
Sieve Method - Standard TSS Method (APHA's TSS Method 2540 D)	**	**	**
Laser Diffraction	**	***	**
Optical Method	*	*	**
Sedimentation (Hydrometer) Analysis	*	*	*
Electron Resistance (Impedance) Method	*	*	*

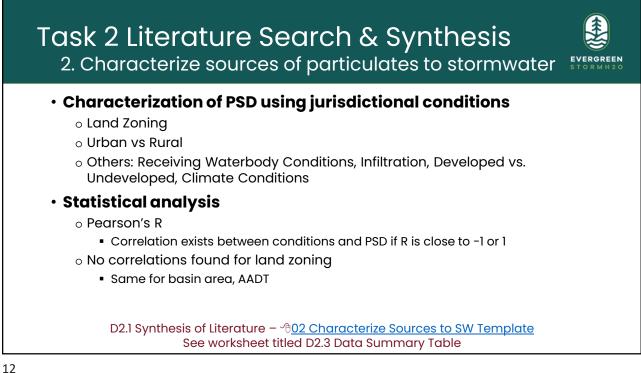
★★★ - TAPE Method, High Repeatability

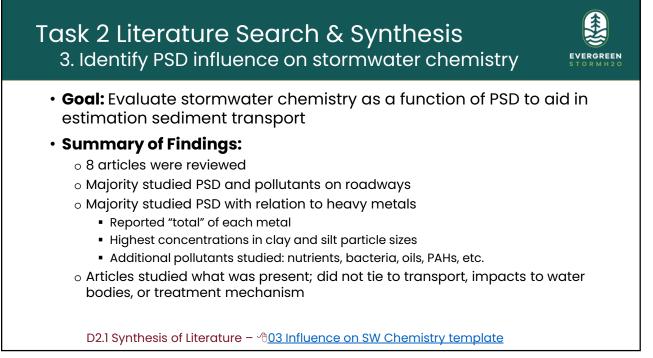
★★ - Detection levels between 3.9-62.5 microns, Medium Repeatability

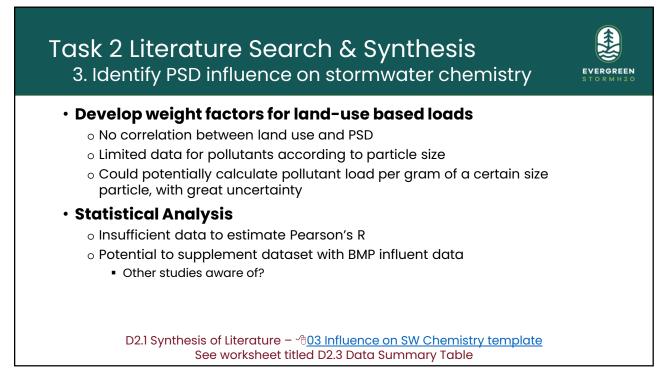
★ - Detection levels 0-100 microns, Low Repeatability

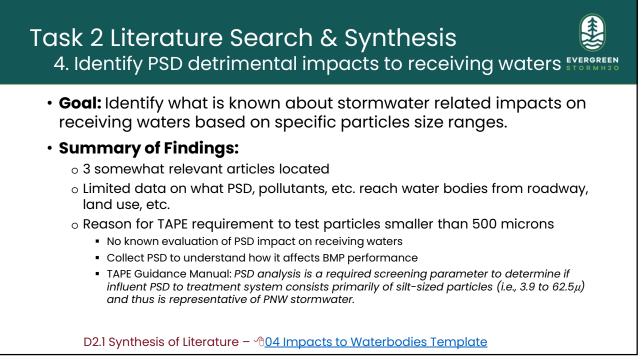


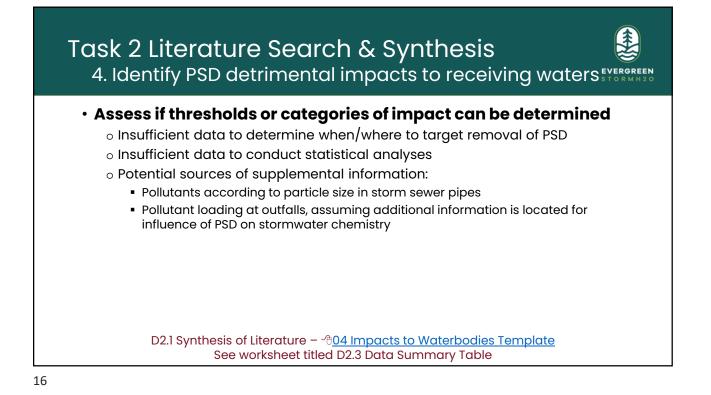
# Characterize sources of particulates to stormwate Characterize sources of particulates to stormwate Construction Const











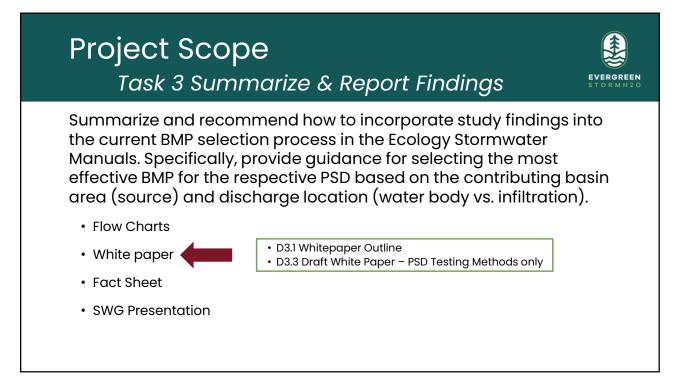
## Task 2 Literature Search & Synthesis 5. BMP effectiveness as a function of PSD

• **Goal:** For structural, operational, and source control BMPs, report on BMP effectiveness based on PSD.

## Summary of literature search:

- Sources identified:
  - Databases: International BMP Database, Highway Runoff Database, P8 Model
  - Literature: ~ 2 dozen sources
  - Other: Phase 1 Monitoring Reports, TAPE BMP data
- $_{\odot}$  Most sources appear to study structural BMPs, or sweeping
- Next steps:
  - Review and filter datasets
  - $_{\odot}$  Compile PSD data by BMP & separate by source/land use
  - $_{\odot}$  Use statistical analyses if feasible to evaluate BMP performance





## **Review instructions** Documents to Review - <u>Comment Due Friday 12/16/22</u> o D2.1 Synthesis of Literature – review 00 Literature Search Summary Table for overview of what we found; anything missing or suggestions for other articles? 00 Literature Search Summary Table 01 Methods for Measuring PSD 02 Characterize Sources of particulates to Stormwater 03 Identify the influence of PSD on Stormwater Chemistry • 04 Identify detrimental impacts of different particle sizes to Receiving Waterbodies o D2.2 List of Data Sources - any articles missing we should look at? • D2.3 Data Summary Tables - included in D2.1 topics (02-04) Excel files and labeled D2.3 Data Summary Table - Review Tables for 02-04 o D3.1 White paper Outline - suggestions for any additional items or revisions? D3.3 – Draft White paper – PSD Testing methods only; review & provide comments - D1.9 TAC Meeting #2 Agenda & Minutes Use Comment form or track changes/comment option in Word

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# Next Meeting

## TAC Meeting #3 - Focus on applying results

• D2.1 & D2.3.

 $_{\odot}$  BMP effectiveness as a function of PSD

• D3.2 Draft Flow Charts

# Action Items



#	Action Item	Responsible Party	Due Date