MANAGING INVASIVE WEEDS IN GREEN STORMWATER FACILITIES

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Overview

- Adaptive Management for Invasive Weeds in Green Stormwater Facilities
- APIMEA: **A**ssess, **P**lan, **I**mplement, **M**onitor, **E**valuate, **A**djust
- Examples from Field
- Take Away Messages
- Resources
- Discussion

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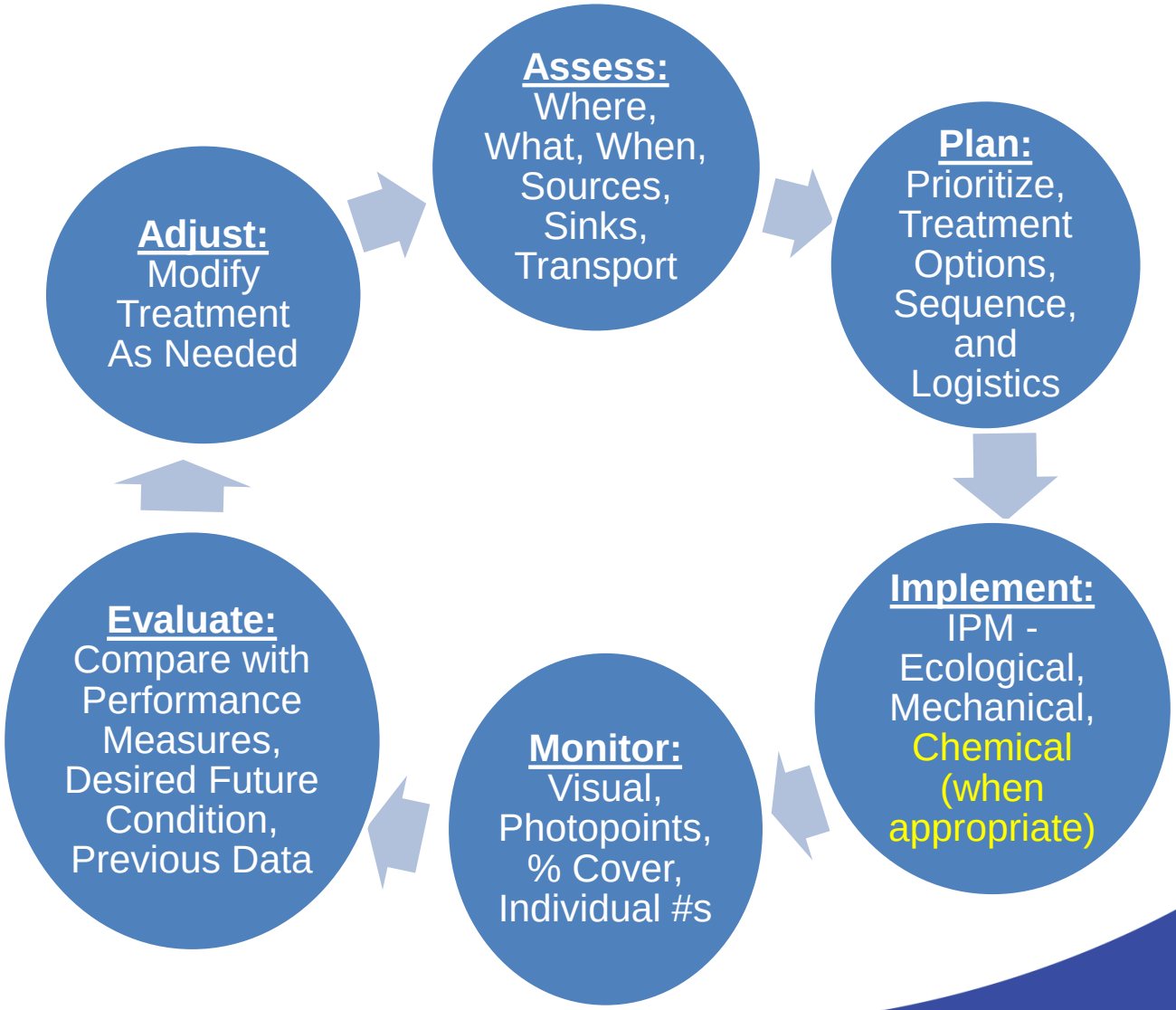
Adaptive Management for Invasive Weeds in Green Stormwater Facilities: Learning by Doing and Evaluating



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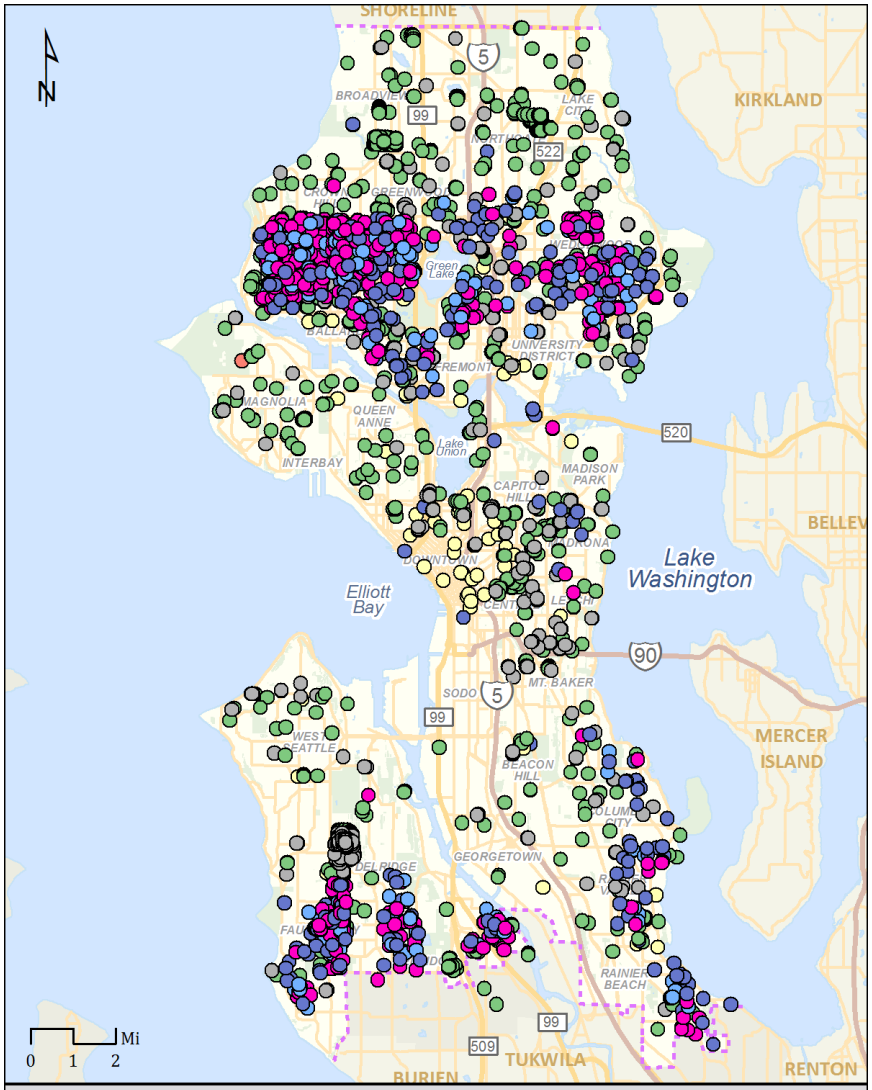
Assess: Where



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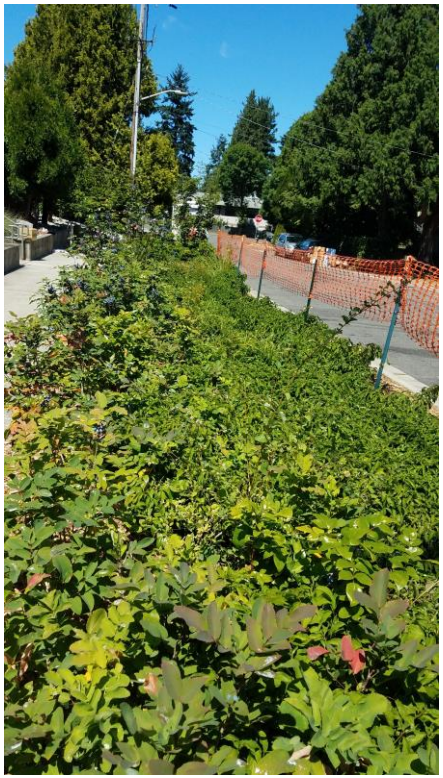
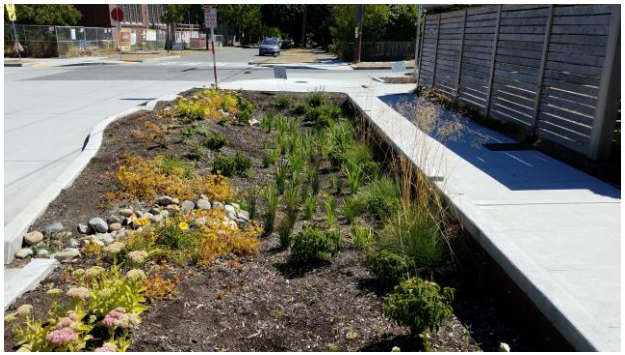
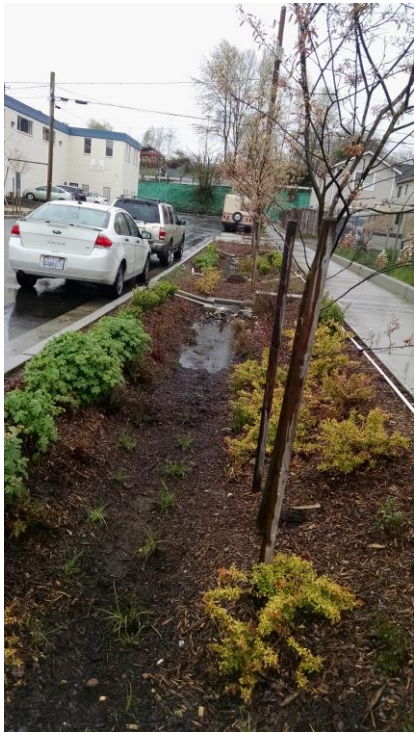
Assess Sites: Natural Drainage Systems and Swales



Pinehurst Swales (Safeway)



Ballard NDS



Duwamish NDS

High Point NDS

Delridge NDS

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Assess Sites: Stormwater Detention Facilities

Meadowbrook Pond

Ashworth Pond

Madison Stormwater Detention Pond

Thornton Creek Water Quality Channel

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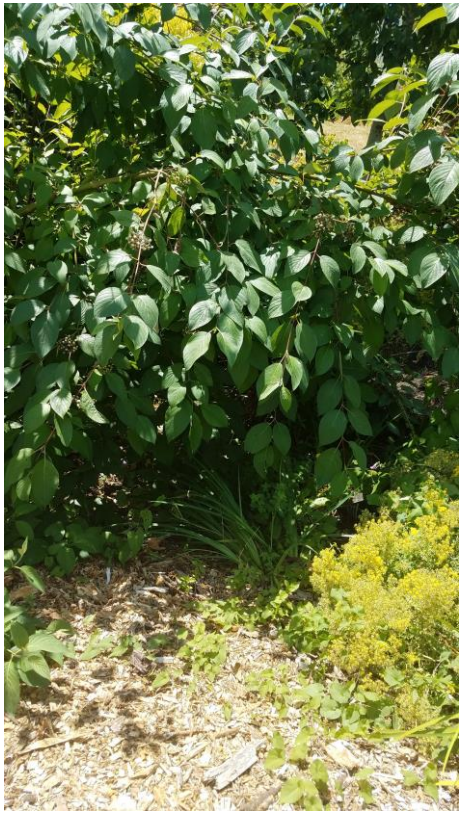
Assess: Weeds In or Adjacent To

Linden Swale

Thornton Creek Water Quality Channel

Madison Detention Pond

Ashworth Pond



Pinehurst Green Grid

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Challenges

- Adjacent Properties and Property Owners
- Upwind/Upstream and Downwind/Downstream
- New Infestation Prevention
- People and Pets
- Birds and Wildlife
- Local, Watershed, City, and County Issues

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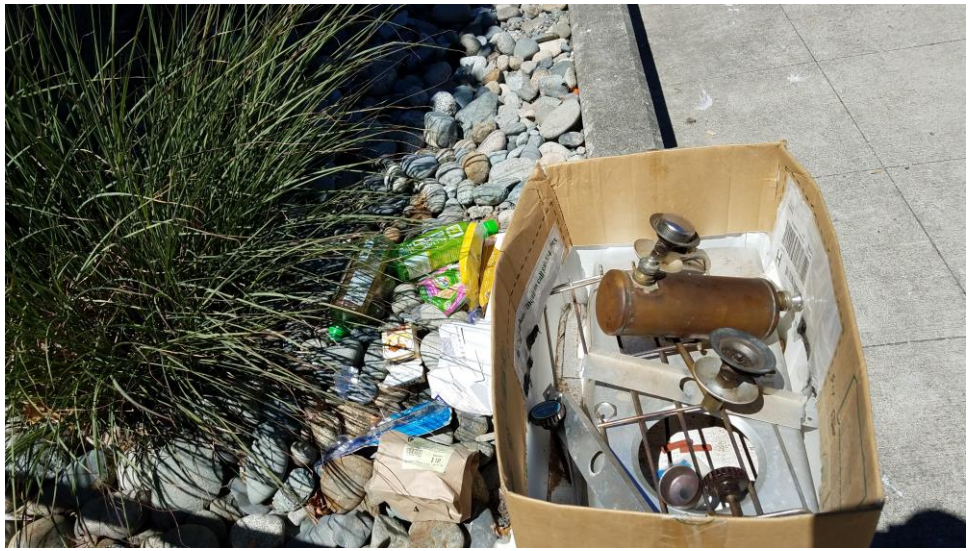
Hazards



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Plan: Prioritize

- **Class A** (Eradication Required): garlic mustard, floating primrose willow
- **Class B** (Control Required): purple loosestrife, policeman's helmet, yellow hawkweed
- **Class C** (Control Required): buffalobur
- **Non-Regulated** (Control Recommended): blackberry, knotweed, reed canary grass, Scotch broom, clematis
- **Weeds of Concern** (Control Recommended): morning glory, spotted jewelweed, bittersweet nightshade, black locust
- Cover and Individuals
- Rate of Spread
- Resources Impacted and Risk

Plan: Sequence and Logistics

- Public Visibility and Concern
- Crew and Resource Availability
- Workflow
- Agency Commitment
- Landscape Position and Topography
- Season
- Environmental Conditions
- Green Waste

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Implement

- **Ecological**
  - Biological- Plant Selection, Replanting, Soil Amendments, Soil Biota, Mulch, and Beneficial Insects
  - Physical- Spacing, Sun/Shade, Water Regime, Substrate/Inorganic Layer, Topography, Exclosure
  - Timing - Frequency and Season
- **Mechanical**
  - Hand Digging , Weeding, and Pulling
  - Mowing, Weedeating, and Cutting
- **Chemical**
  - As a last resort and when considered a BMP
  - 1% imazapyr or glyphosate

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Implement

Water Regime, Photo provided by Drena Donofrio

Hand Pulling, Photo provided by Jana Dilley

Hand Digging

Herbicide Application, Photo provided by Minwook Park and Cory Burk

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Monitor, Evaluate, and Adjust

- Field Observations and Notes
- Photopoints
- % Weed v. Planted Species Cover in Area
- Compare Species Numbers with Original Design and Performance Measures
- Modify Treatment as Needed
- Education and Outreach

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Example: Linden GSI – Pre-Treatment 7/17

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Linden GSI: Weed Sleuthing – Source, Sink, and Transport

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Linden Swale: Post-Treatment 9/17

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Ashworth Pond

Pre-Treatment April 2017

Post-Treatment August 2017

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Thornton Creek Confluence adjacent to Meadowbrook Pond

Pre-Treatment
June 2017

Post-Treatment
October 2017

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Take Away Messages

- Adaptive Management Articulates an Iterative Process for Invasive Weed Management: Assess, Plan, Implement, Monitor, Evaluate, Adjust (and Repeat).

- Prioritization Factors Are: Class, Cover, Rate of Spread, Resources Impacted, and Risk.

- Though the biggest constraints are time and resources, a little extra effort for monitoring and evaluation could go a long way in improving invasive weed management.

- Though as practitioners we often first go to mechanical methods, it is critical to consider ecological factors for long-term invasive weed management.

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Local Web Resources

King County:

http://www.kingcounty.gov/services/environment/animals-and-plants/noxious-weeds.aspx

Washington State Noxious Weed Control Board:

https://www.nwcb.wa.gov/

UW Center for Urban Horticulture:

https://botanicgardens.uw.edu/center-for-urban-horticulture/

Acknowledgements

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Seattle Center: Steve Socie

King County: Karen Peterson

EarthCorps: Minwook Park, Cory Burk, and Bill Brosseau

Tree Ambassadors: Anna Carragee and Aaron George

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Discussion

- What are other challenges facing weed management in green stormwater facilities not addressed here?
- How should these be addressed?
- Any other techniques that you would try?
- What do you think of an adaptive management approach for weed management in green stormwater facilities or other areas?
- What would be the opportunities or hindrances in applying it?

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Questions?

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