

LAWTON

Teacher Guide

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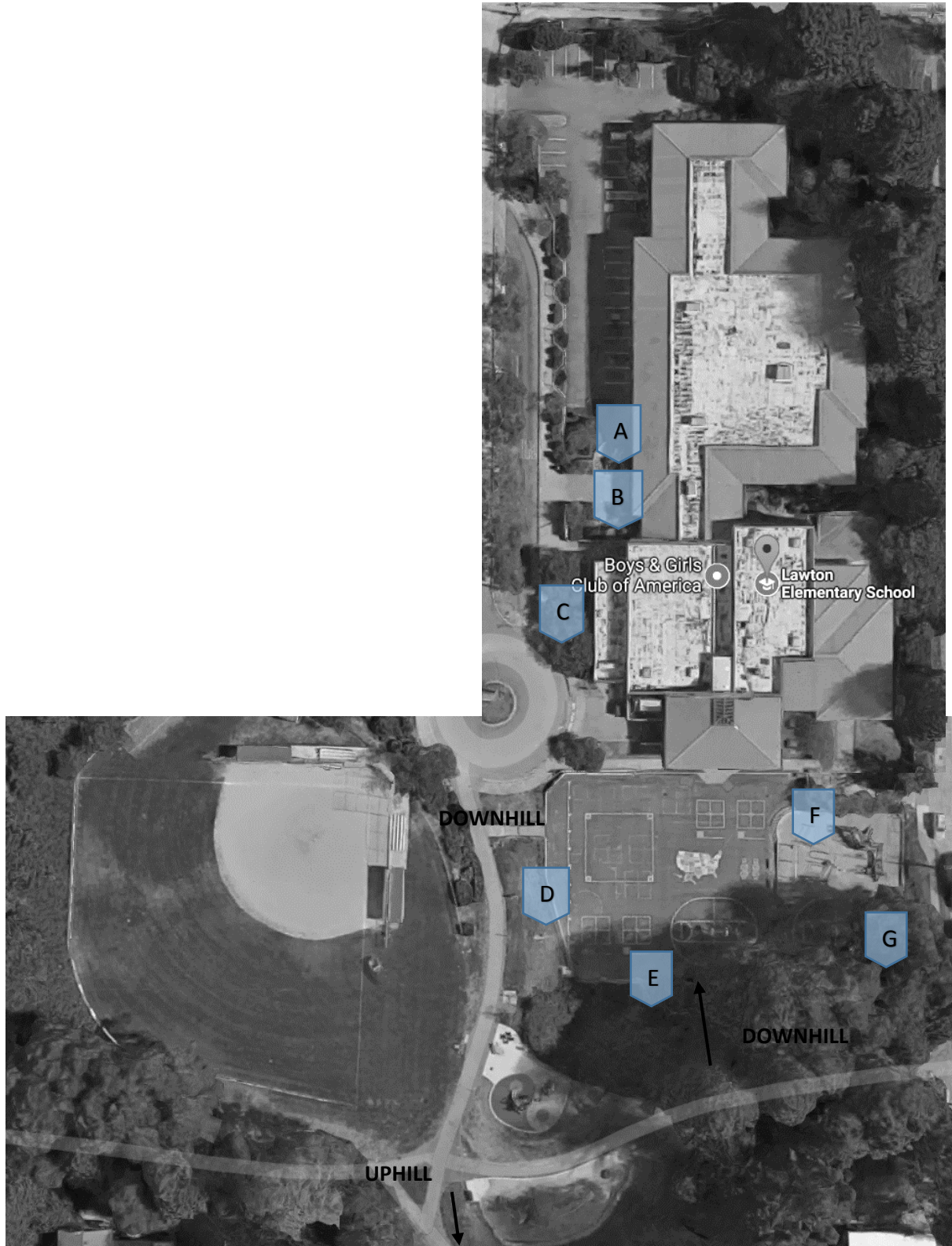
This guide supports the Community Waters Science Unit Teacher Manual with information, maps, and images specific to your school and neighborhood. It is written for teachers; its goal is to provide a better understanding of what is happening with stormwater in and around your school. The points of interest and walking field trip route are suggestions and should be adapted as desired.

If you have any questions about these maps, accompanying lessons, or stormwater around your school, contact IslandWood staff at communitywaters@IslandWood.org.



Stormwater in the Schoolyard– Lesson 3

This map and points of interest (photos and info) can be used to guide your class' exploration of the schoolyard. You will find the student worksheet for this lesson following the teacher guide version. Please use the extra space on the pages to add your own notes and questions! ☺





A. & B. Gutters and Downspouts

Downspouts collect water from this roof, and send the stormwater into the ground. Can students find these themselves? Where do you think the water might go? Where else can you find downspouts? Downspouts have an interesting shape of drain. Why do you think this drain is shaped the way it is? Where does the water come from and where do you think it might go?

How does this “disconnected downspout” compare to other downspouts at the school?



C. Drain & Lawn

Storm Drains move water into underground pipes to take it somewhere else. Anything that gets carried into the drain may end up in a local stream, lake, or Puget Sound. Why do you think the drain was built in this location? Where does water come from that goes into this drain? Why might it have been placed in this place? Is the drain working properly? What is in the drain?

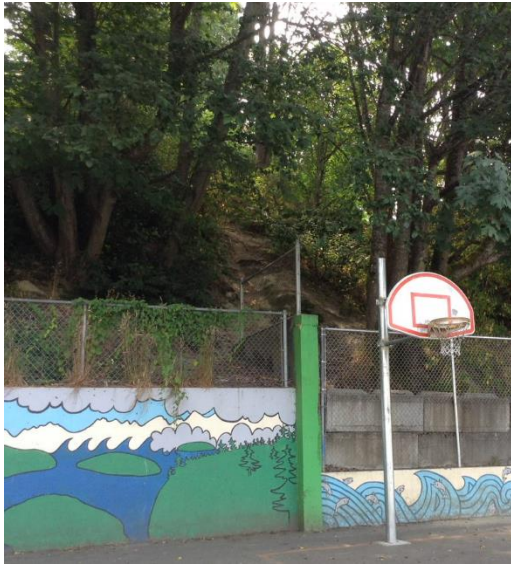
Storm drain in lawn

Why might this drain be here even though it’s surrounded by pervious surface (lawn)? Is this drain covered by anything (leaves, trash)?



D. Erosion

Water is a powerful force and can shape and move other objects over time. What do you think happened here? Was water the cause? Where would water flow on this surface?



E. Trees and downhill

Trees catch some rainwater in their leaves, releasing it more slowly to the ground. Tree roots hold soil in place so that it doesn't get washed away by runoff. Ask the students what they think trees do for stormwater. What would be different in this spot if these trees weren't there? What is around the tree(s)? What kind of ground are they growing in? Are there people or animals that would appreciate this tree being here? Do you like having trees in your neighborhood or your schoolyard? Why or why not? Consider the slope of the landscape



F. Artificial Turf

Consider the different types of ground in your schoolyard (turf, asphalt, woodchips, grass). Why are each of them used? How does stormwater interact with them differently? Which kinds of surfaces do you think help stormwater the most? Which ones might have a negative impact and why? Hint: What is the artificial turf made of? Do you think any of these materials have an impact on stormwater runoff or other parts of the environment? How does it differ from living grass?



G. Different Surfaces

Here is a good spot to consider the different types of surfaces used in the schoolyard. How does water move differently on asphalt, woodchips, and the rubber turf?

Mapping Your Schoolyard – Lawton

Name: _____ Date: _____

Include on your map:

- Symbols from the Key including flow of water, surfaces, and storm drains.
- Partially pervious surfaces can be shown with less dots.
- Label locations of litter, pollution and places where puddles form.
- Sketch any specific **stormwater problems** you see or are aware of.

Map Key



Direction of
water flow



Pervious
Surface



Impervious
Surface



Storm
Drain

Add your own symbol here!



Local Stormwater Systems – Lesson 5

Teacher Overview

What happens with the Stormwater Pipes around your school?



- Stormwater that falls on your schoolyard flows into storm drains (blue dots on the map) and through pipes (green or yellow lines) into a combined wastewater and stormwater pipe (orange line). The yellow lines on the map also carry sewer water into the pipes.

- The combined stormwater and sewer water pipes flow north along either side of your school and meet up at 26th Ave West and Gilman Avenue North. The pipes then travel under the railroad and

down 25th Avenue West into a large pipe (red on map) that takes the water west to the West Point Treatment Plant.



Where does your stormwater runoff end up?

- Usually stormwater and wastewater gets treated at the wastewater treatment plant before being piped into the Puget Sound west of Discovery Park.
- Unfortunately, during a big storm event the large amounts of stormwater flowing into the treatment plant pipes from all over Seattle are beyond the capacity of the pipes and the treatment plant. The water backs up in the pipes and is discharged at Combined Sewer Overflow (CSO) points. The nearest of these points to Lawton are in Salmon Bay. While your school's water would not actually end up in Salmon Bay, the water added to the system from your neighborhood (in combination with all the other combined sewer neighborhoods in the city) contributes to the system hitting capacity.

Video: Since the CSO backups that can occur end up in Salmon Bay we suggest watching the “**Drained: Urban Stormwater Pollution**” video (OPTION B) from 0:00 to 2:11 during Lesson 5. Point out to your students that the CSO during a big storm would have everything described, PLUS everything from the sewers (including human waste). You can find this video linked on communitywaters.org or at <https://vimeo.com/51603152>.

Please Note: The pipes information provided here is our best estimate of the stormwater flow in your community based on the information we have currently. If you encounter more information in the course of your investigation please let us know so we can update future versions of this document.

Stormwater in our Community – Lesson 6

Please use this map and points of interest as suggestions for your walking field trip, recognizing there may be other things of importance to note in other areas. It may be useful to bring the stormwater pipes map with you for reference. Questions posed are intended to be posed to students as desired.



Suggested Route: Exit school and head RIGHT towards Lawton park. Take path between playgrounds towards 26th Ave, Turn LEFT on Thurston St, Turn RIGHT on 25th Ave, at end of street go down steps to view water entering drain at site D, return up steps to get on path through Lawton Park, once you are no longer in tree cover turn RIGHT back to school

This route contains a steep downhill and some uphill portions

Points of Interest



A. Playground Surfaces

Stormwater that can't absorb into the ground runs off it. Consider the surfaces of this area: where will the water end up? What kind of ground surface is here? How do these surfaces and vegetation affect the stormwater runoff here? How does it compare with the other types of soil that you have seen in other places on the school grounds?. Have students observed stormwater runoff here? How pervious is this surface? Where does the rainwater go? What might be carried with it?



B. Gravel and slope at Residence

What do you notice about this feature? Gravel and rocks can hold water temporarily reducing water runoff. How do the slope and gravel work together to solve stormwater problems?



C. Drain at slope

Storm Drains move water into underground pipes to take it somewhere else. Anything that gets carried into the drain may end up in a local stream, lake, or Puget Sound. Why do you think the drain was built in this location? Where does water come from that goes into this drain? Is the drain working properly? What is in the drain?



D. Drain and downspouts on Condos

Take a look at the repeating downslopes on these condos. Where are they guiding water to?



E. Creek into Drain

Streams and ponds are habitat for many organisms that share our ecosystem. They will look different at different times of year and during different amounts of rainfall. What has been done here to control erosion and water flow? Is this a longterm fix? What does the water in the stream look like? Who would be affected here if the stream flooded?



F. Downhill View

This can be a great opportunity to visualize how stormwater would move over a landscape on a large scale. What is up the hill from here? Who or what might be impacted by stormwater down the hill? If it helps, you can remind students of the models they made in class. How did the water move through the model? What is similar about the model and this landscape?