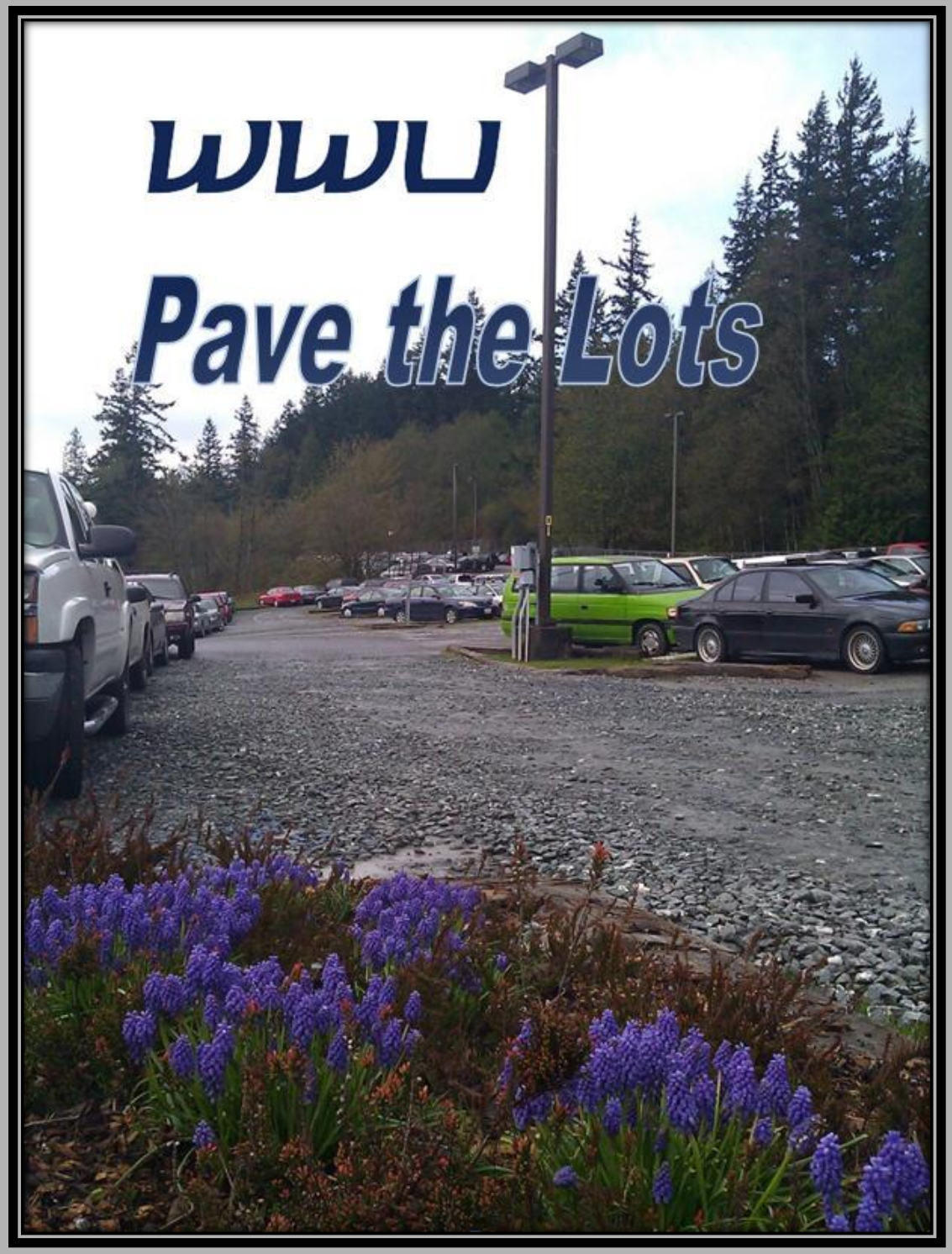

WWU
Pave the Lots

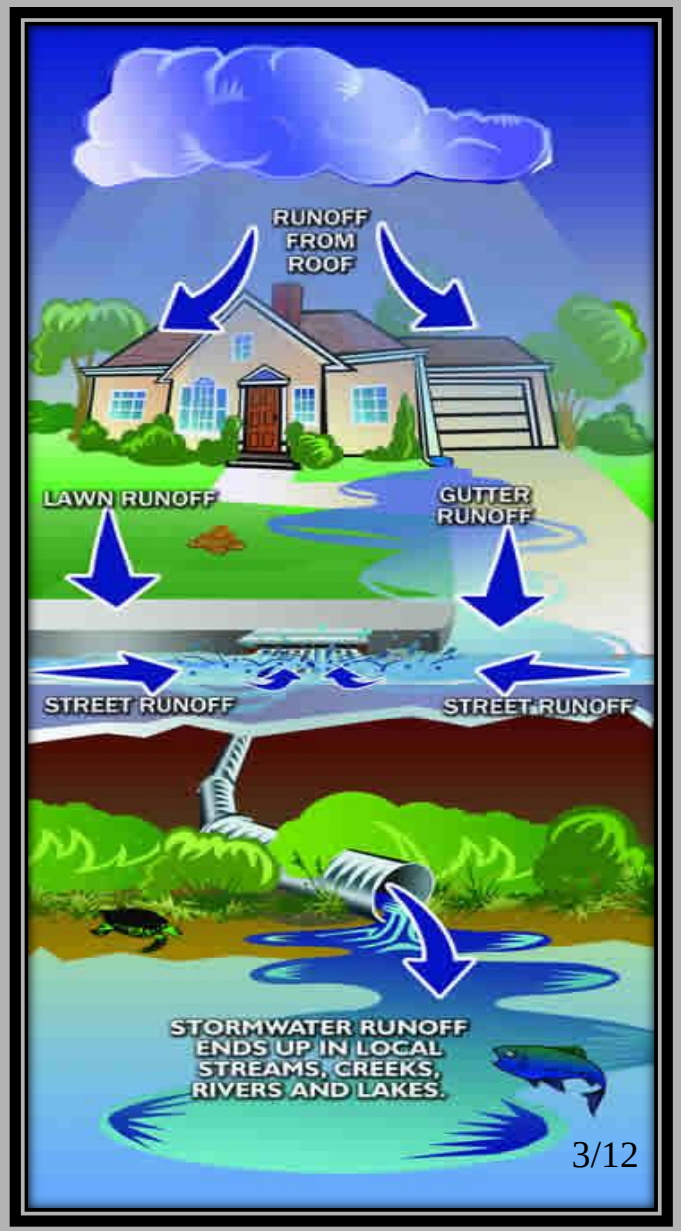

WWU
Pave the Lots

Key Terms:

Stormwater runoff: Rain water that runs off surfaces such as rooftops, paved streets, highways, and parking lots.

Impervious: Not allowing water to pass through

Permeable/Porous/Pervious: Allows water to pass through. Essentially same term, often used interchangeably



Current Lot Problems:

- Sediment and car pollution from stormwater runoff into streams
- Pot holes, mud puddles and dust
- Constant maintenance on gravel
- Environmental image issue for WWU
- Solution?

Pervious Concrete

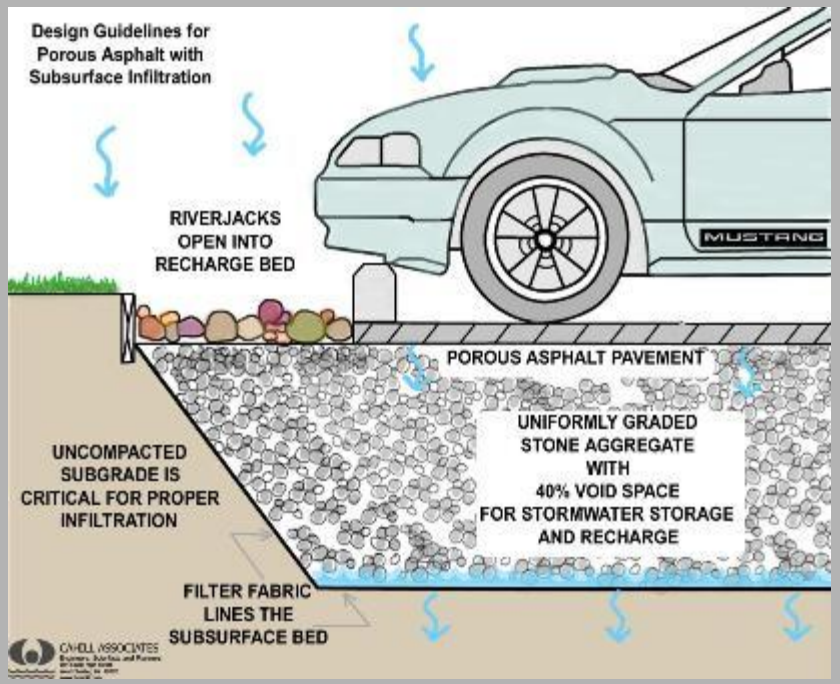
What can it do?

Pervious Pavement

How does it work?

What is it?

- Similar to conventional, except aggregate mix made without ‘fine’ particles
- Underneath pavement, several foot thick gravel drainage bed
- Water can infiltrate into ground water



How it can help

- Eliminate sediment and pollutants

- Volume reduction of stormwater

Cost and Benefit of Pervious Concrete

Cost

- 15-20% higher cost of unconventional pavement
- Substantial redevelopment would trigger City of Bellingham's new storm water rules

Concrete can be made any color

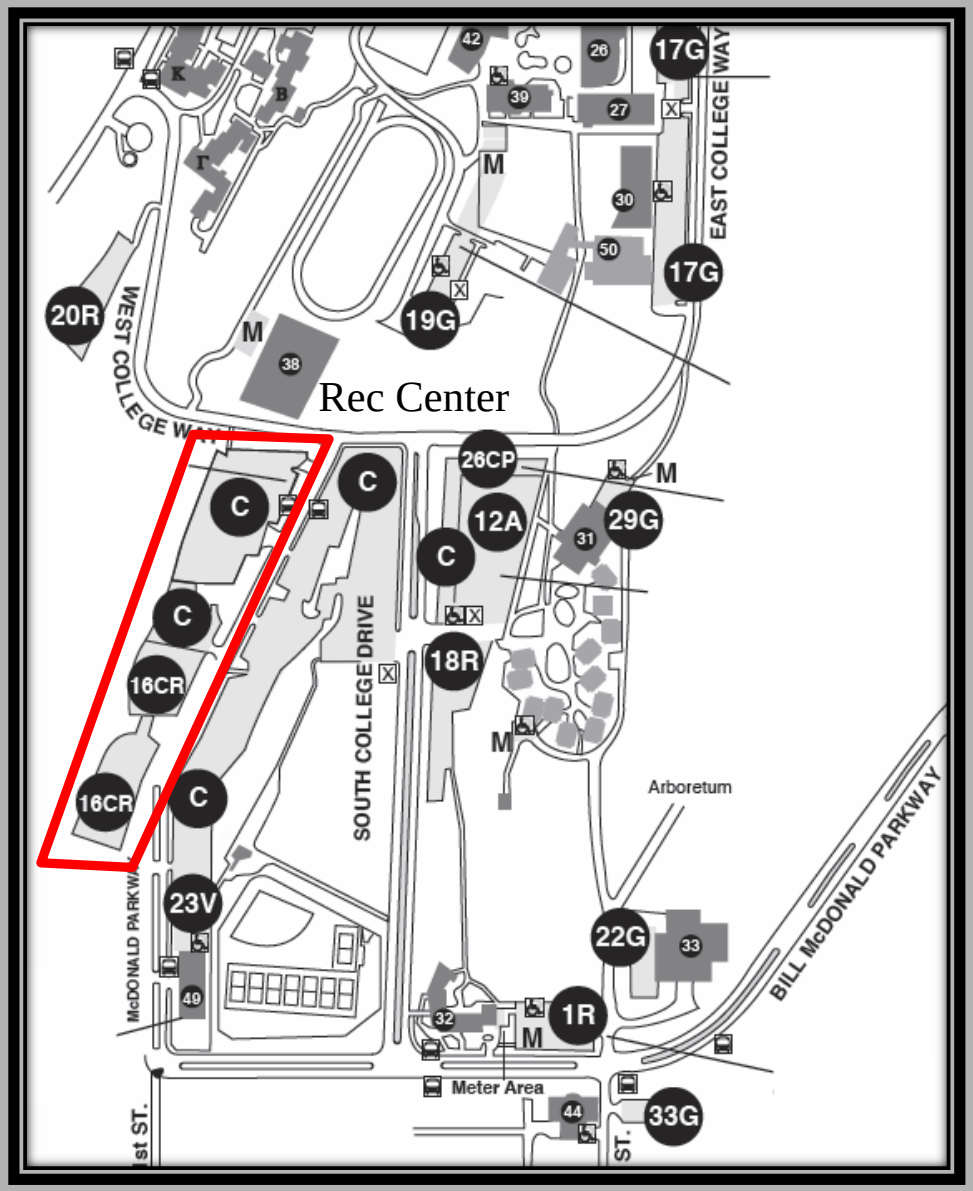
Benefits

- Impetus and funding to maintain failing stormwater wetland
- Supports Western's ideals of excellence of a college of the environment
- Solves environmental and aesthetic issues

WWU's stormwater wetland

Pave upper C-Lot

- Pilot project
- Most visible parking lot
- Stormwater vault filling from west side
- Similar dimensions to largest pervious concrete parking lot in Washington



Case Studies

Quil Ceda Casino

- Tulalip Tribe in Tulalip, WA
- Largest pervious concrete parking lot in the state of WA. (200,000 sq ft or 22,200 sq yd)

Evergreen State College

- Replaced 34,000 square feet (over 250 parking spaces) of existing landscaping to permeable pavers.
- Installed 10 parking spaces worth of pervious asphalt as a pilot.

Cost Analysis

Type	Cost for West C-lot	Maintenance
Pervious Concrete	$1.2 million*	• Air vacuum street sweeper • Pressure wash if needed
Traditional Concrete	$1.05 million*	• Concrete sealer 1-5 years • Additional Stormwater management system
Gravel	$30,000 + yearly maintenance for lots	• **Fresh gravel** after rain storm to fill pot holes • **Source of sediment** build up in Stormwater vault and Stormwater wetland dredge

*Just cost of materials

Future Works

- Continue student support and awareness
  - Student survey
  - Facebook page continuation
- Geo-tech analysis of hydraulic properties of gravel lots soil
- Cost estimate from company

Questions?

Potential Problems with Pervious Concrete

- Freeze/thaw issue
- Clogging of pores
- Infiltration rate of natural soil

South Campus Parking lots

Black ice forms on top of adjacent impervious asphalt but not pervious concrete

Suitable soils in blue