



## Puget Sound Imperviousness

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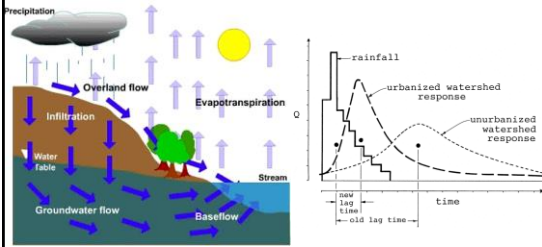
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## The Watershed Concept



Credit: [http://www.brown.edu/Courses/GE0158/web2\\_revised/dennis/index.html](http://www.brown.edu/Courses/GE0158/web2_revised/dennis/index.html)

Credit: <http://web.mst.edu/~rogersda/umrcourses/ga301/evolving%20aws%20for%20food%20damage%20litigation.html>

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## Effects of impervious surfaces

- Reduce water infiltration
- Speed storm-water flow to streams, rivers and the Sound
- Shorter faster flow paths increase pollution transfer and stream flow variability
- Increasing post storm stream flow reduces groundwater recharge
- Increased short term flow changes in-stream conditions

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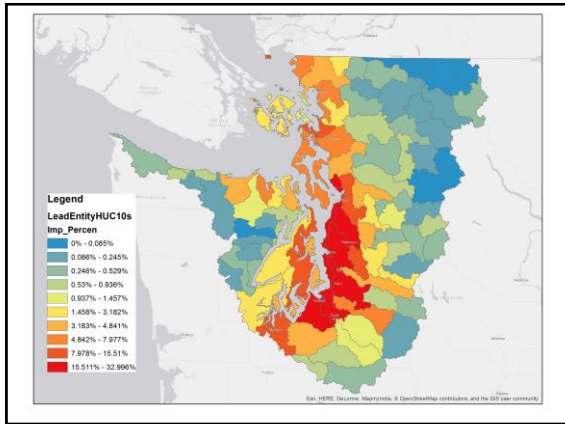
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### Change Detection & Data



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### Two views of the shore



Landsat 30-m pixel  
139-ft diagonal



NAIP 1-m pixel  
4.6-ft diagonal

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WDFW's

High Resolution Change Detection Program

- Land cover change measured from 1m NAIP data
- Focuses on mapping urbanization and forestry
- Completed time-periods
  - 2006-2009, 2009-2011,
- Consistently implemented throughout Puget Sound
- Applications answering basic questions with local partners

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From 2006-2011 approximately 250,000 people moved to Puget Sound accompanied by 1,500 ft<sup>2</sup> of impervious surface each.



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### Change Map Data

- Each mapped change location has up to six analyst assigned attributes:
  - Change type/agent (4 primary classes)
    - Change percentage (all in 25% increments)
    - Decrease in tree cover
    - Increase in impervious surface
    - Increase in semi-pervious surface
  - Starting land cover

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### Forest to Developed Example



Cover: Tree/shrub  
Area: 16.9 acres



Change Type: Development  
Changed area: 100%  
Tree decrease: 100%  
Impervious increase: 50%  
Semi-pervious increase: 25%

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### Mixed to Developed Example



Cover: Mixed Non-built  
Area: 0.68 acres



Change Type: Development  
Changed area: 50%  
Tree decrease: 25%  
Impervious increase: 25%  
Semi-pervious increase: 25%

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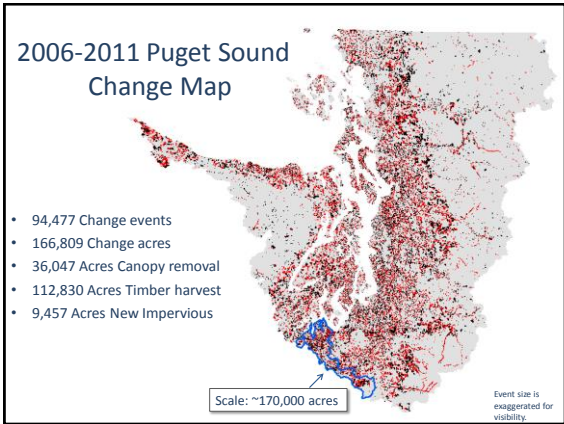
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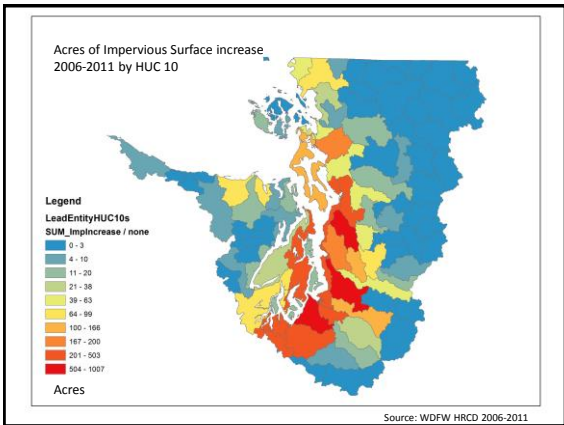
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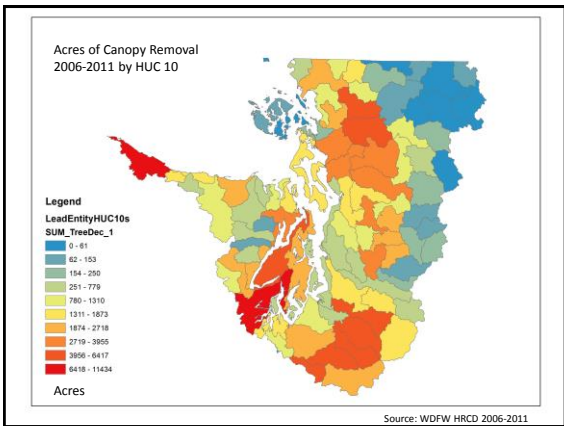
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### HRCO 2015 and Future

1. Data availability: 2006-2009 and 2009-2011 (today)
2. 2011-2013 Analysis (Early 2016)
3. SMP monitoring project
4. Experiment with Land cover modeling
5. Next NAIP flight this summer 2015
6. Funding currently depends on final state budget approval.
7. 2013-2015: Early 2017 if approved.

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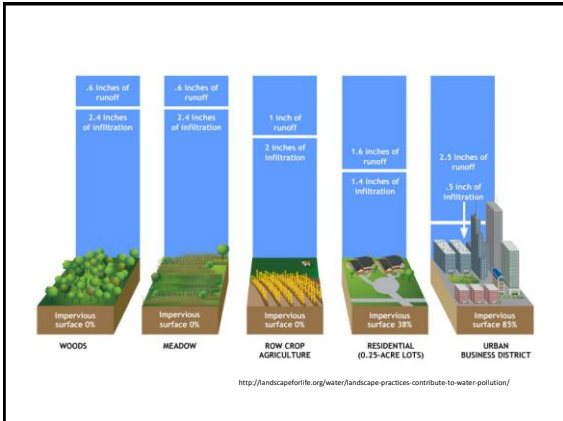
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