Basin-Wide LID Retrofit Case Study: Silverdale, Kitsap County

Presentation Overview

Need for Retrofits
Retrofit Opportunities
Prioritizing Sites
Concepts and Design

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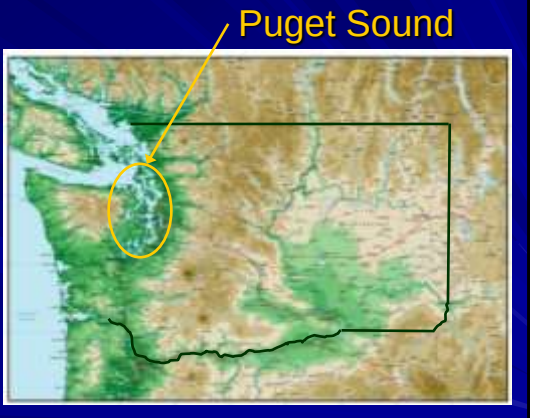
WHY RETROFIT ?

PUGET SOUND IN DECLINE

- Degradation at very low levels of development
- Stormwater = primary driver
- Water quality and quantity



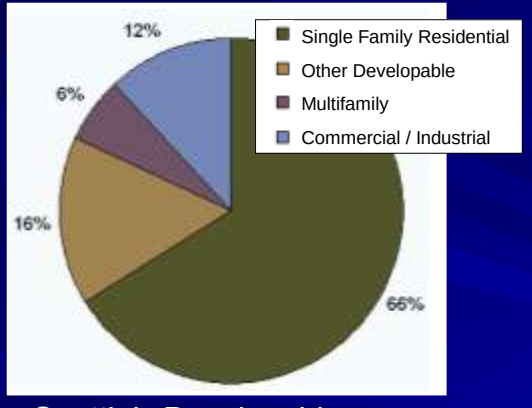
WHY RETROFIT ?

DEVELOPMENT STNDS

- Water Quality
- Creek Protection
- LID Required

WHY RETROFIT ?

STDS INSUFFICIENT FOR URBAN AREAS

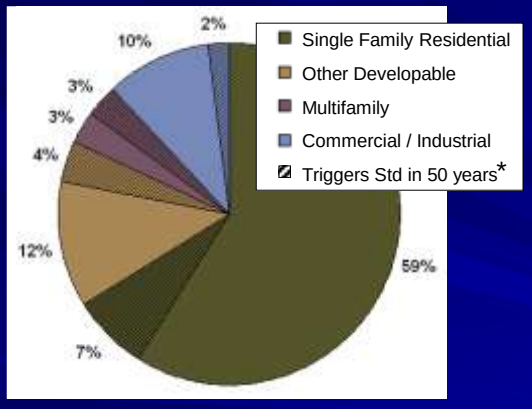


Seattle's Developable Area in Creek Basins

Effectiveness based on redevelopment rate

WHY RETROFIT ?

STDS INSUFFICIENT FOR URBAN AREAS



Seattle's Projected Re/Development in Creek Basins

Seattle's redevelopment rate addresses only 16% of area in 50 years

*2,000 sf threshold

WHY RETROFIT ?

MORE MUST BE DONE

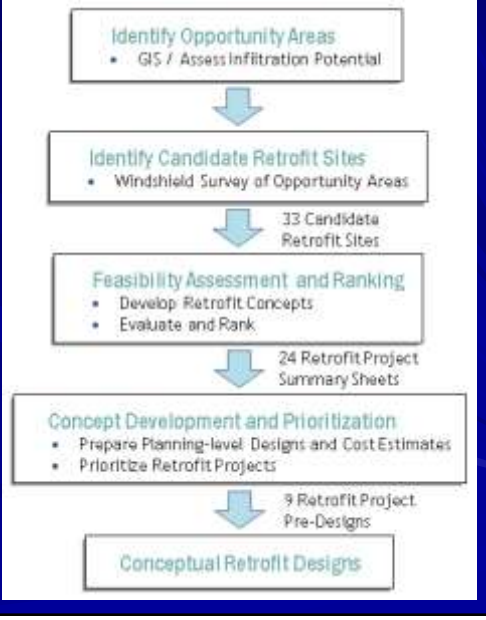
SILVERDALE LID RETROFIT PLAN

PROJECT BACKGROUND

- Kitsap County
- Funded by EPA Grant
- Water Quality
- 3,500 acres
- Urban commercial core
- Private, Public & ROW

SILVERDALE LID RETROFIT PLAN

RETROFIT PLANNING APPROACH



IDENTIFY OPPORTUNITY AREAS

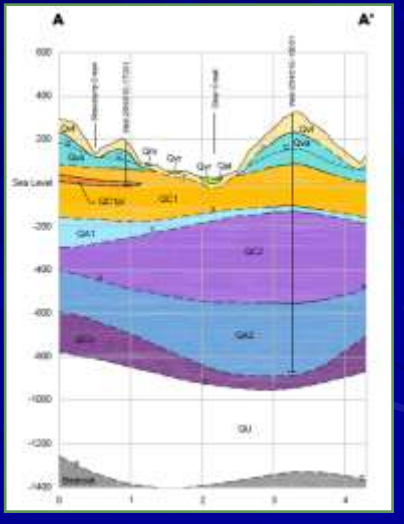
GIS EVALUATION

- Delineate Subbasins (pipe network and topo)
- Exclude Areas Treated
- ID Large Areas Untreated PGIS
- Other Opportunities (available ROW, open-space)

IDENTIFY OPPORTUNITY AREAS

INFILTRATION ASSESSMENT

- Shallow
  - Permeability surficial soils
  - Depth to groundwater
  - Proximity to sensitive slopes
- Deep
  - Depth to permeable zone
  - Thickness unsaturated zone
  - Proximity to sensitive slopes



IDENTIFY OPPORTUNITY AREAS

INFILTRATION ASSESSMENT

Identify applicable BMP suite

Shallow

Deep

ID CANDIDATE RETROFIT SITES

WINDSHIELD SURVEY

Probably Feasibility & Potential Benefits

33 Candidate Retrofit Sites

FEASIBILITY / BENEFIT EVALUATION

QUANTITATIVE ASSESSMENT

- Pollutant Load Reductions
  - fecal coliform, TN, TSS, dissolved Zn
- Vehicular Level of Use
- Ease of Funding
- Ancillary benefits
  - Visibility/Educational Value
  - Potential Partnering

FEASIBILITY / BENEFIT EVALUATION

RANKING

- Pollutant Load Reductions → Ranked
  - fecal coliform, TN, TSS, dissolved Zn
- Vehicular Level of Use → Ranked
- Ease of Funding → Ranked
- Ancillary benefits → Ranked
  - Visibility/Educational Value
  - Potential Partnering

Top 24 Candidate Retrofit Sites

RETROFIT CONCEPT DESIGNS

RIGHT-OF-WAY

Bioretention in Planting Strips

RETROFIT CONCEPT DESIGNS

RIGHT-OF-WAY

Bioretention in Medians

RETROFIT CONCEPT DESIGNS

RIGHT-OF-WAY

Filtration Planters in Planting Strips

RETROFIT CONCEPT DESIGNS

PARKING LOTS

Bioretention in Parking Lots

RETROFIT CONCEPT DESIGNS

PARKING LOTS

Bioswales in Parking Lots

RETROFIT CONCEPT DESIGNS

PARKING LOTS

Permeable Pavement

RETROFIT CONCEPT DESIGNS

LARGER DRAINAGE AREAS

Constructed Wetlands

RETROFIT CONCEPT DESIGNS

SUMMARY SHEETS

25 Planning-level Designs , Costs, Benefits

RETROFIT CONCEPT DESIGNS

PRIORITIZATION

Top 9 Retrofit Projects Designed

RETROFIT DESIGNS

CONSTRUCTED WETLAND

RETROFIT DESIGNS

MALL BIORETENTION

RETROFIT DESIGNS

MEDIAN RAIN GARDENS

LID IN INDUSTRIAL SETTINGS

NON INFILTRATING OPTIONS

CONTACT INFORMATION

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