



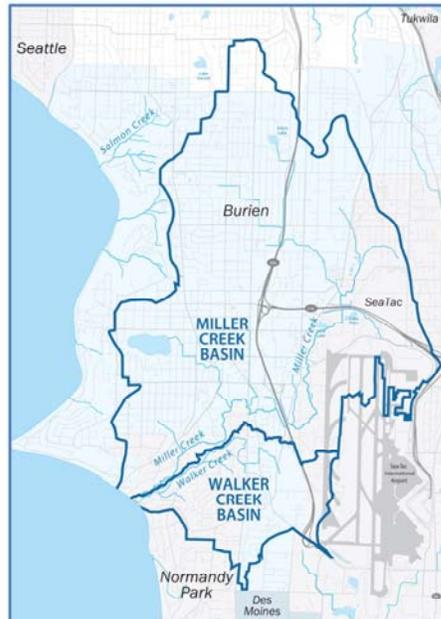
**Elissa Ostergaard**

- Hello all, thank you to the Normandy Park City Council for the opportunity to present to you tonight. My name is Elissa Ostergaard with King County and I'm the Basin Steward for the Miller-Walker Basin. King County's basin stewards work with the community and other public agencies to improve and protect our watersheds and local habitats through a variety of conservation and restoration projects.
- For those who might not have attended our previous two public meeting series, I am working with the Miller-Walker Basin Partners – Normandy Park, Burien, SeaTac and the Port of Seattle – on a retrofit study to identify and evaluate opportunities for stormwater projects in the Miller-Walker drainage basin.
- My position is funded in part by the jurisdictions in the Miller-Walker basin.

## MILLER-WALKER BASIN

Stormwater drainage basin that holds Miller & Walker creeks

- Covers approximately eight square miles
- Basin Partners:
  - Port of Seattle
  - Burien
  - Normandy Park
  - SeaTac
  - King County



### Elissa Ostergaard

- As you may know, the Miller-Walker drainage basin covers Normandy Park, Burien, SeaTac, the Port of Seattle and a small part of unincorporated King County.
- As I just mentioned, these jurisdictions and King County make up the Basin Partners.
- The Miller-Walker Basin is also part of the Green/Duwamish and Central Puget Sound Watershed (WRIA 9). Many of these local governments are working with each other with the common objective of clean water and healthy streams.

## PRESENTATION OVERVIEW

- Briefly review project background, purpose and objectives
- Show initial concepts for the top stormwater retrofit sites
- Share next steps

## GOALS

- Describe the six stormwater retrofit sites and why they were selected
- Answer questions about the stormwater retrofit

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### **Elissa Ostergaard**

- Tonight I will briefly review with you the purpose for the stormwater retrofit analysis, the progress we've made since our last community meetings in May, and the initial results of our work so far, including initial concepts for the top stormwater retrofit sites.
- Our goals tonight are to share the top stormwater retrofit sites and how those were selected and answer your questions on our progress.

## **PROJECT BACKGROUND**

**Elissa Ostergaard**

- First, let's quickly take a look at the reasons we are conducting this analysis in your community.

## STORMWATER RUNOFF

When it rains, unabsorbed stormwater:

- Collects pollutants – oils, grease, chemicals, pesticides, metal, animal waste, etc.
- Causes high stream flow for Miller & Walker creeks
- Damages natural habitat and impacts wildlife



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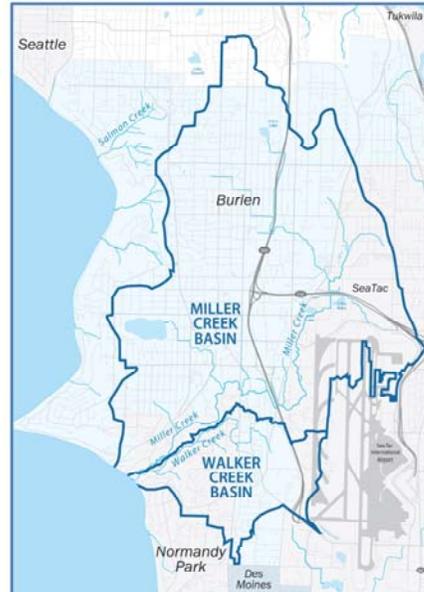
### Elissa Ostergaard

- When it rains, much of the water falls on hard or impervious surfaces, such as sidewalks and roads. The rainwater then picks up contaminants, including everyday items like weed killers and motor oil, and drains directly into Miller and Walker creeks and eventually Puget Sound.
- This has a significant effect on the health of the creeks and the wildlife that inhabit the creeks.
- In fact, we have a program where volunteers survey the creeks each fall looking for spawning salmon. They have documented that 50-95% of the coho that return to Miller and Walker creeks to spawn, die before they have a chance to spawn because the water is so polluted. NOAA and others are studying this issue, and have discovered that it is caused by road runoff that is not infiltrating into the ground before it goes to the creeks. They have sampled road runoff, exposed adult coho to it, and they die within 4 hours. They take that same road runoff, filter it through rain garden soils, and exposed adult coho survive for 48 hours.

## **STORMWATER RETROFITS**

Controlling stormwater benefits our communities, wildlife and natural habitat

- Cleans polluted runoff
- Decreases stream flow in local waterways during storms
- Increases stream flow during the dry summer months
- Reduces erosion
- Reduces flooding on roadways and private property



### **Elissa Ostergaard**

- Stormwater retrofits are projects that control and manage runoff, allowing us to improve the water quality of our waterways, which benefits wildlife and natural habitat.
- Other benefits to managing stormwater can include:
  - Improving the stream flow of the Miller and Walker creeks
  - Decreasing erosion throughout the basin
  - And reducing the number of flooding incidents, both on private property and local roads

## GREEN STORMWATER PROJECTS

- Absorb and filter rainwater
- Remove pollutants using plants and soils
- Replenish groundwater
- Add vegetation and attractive plantings to a neighborhood
- Reduce flooding



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### Elissa Ostergaard

- One of the ways we can manage stormwater runoff is through green stormwater projects.
- Green stormwater projects may be rain gardens, permeable pavement, or other concepts that use soils or plants to slow down, absorb, and filter stormwater instead of piping the water directly into Puget Sound, as is traditionally done.
- Green stormwater infrastructure can have many benefits, including naturally removing pollutants, replenishing groundwater by letting rain soak into the ground once it lands, reducing flooding, and adding vegetation to make our neighborhoods more “green.”

## TRADITIONAL STORMWATER PROJECTS

- Collect and transport stormwater using pipes and conveyance systems
- Focus on controlling peak flow rates
- Little or no focus on cleaning stormwater



A stormwater detention pond in Burien

### Elissa Ostergaard

- Another way to manage stormwater, which is much more commonly found in our communities, is traditional stormwater infrastructure, such as detention ponds and conveyance systems.
- This kind of infrastructure was built with a different set of goals in mind than we have today and are more focused on moving stormwater quickly and efficiently to either local waterways or other stormwater management facilities, like the detention pond shown here.
- Traditional stormwater projects are built to prevent flooding and other problems, but do not clean the stormwater before it is sent to Miller and Walker creeks.

## PROJECT SCHEDULE

### Spring 2014

Identify potential stormwater retrofit project sites

#### Public Meeting Series #1

### Summer 2014

Evaluate and rank stormwater retrofit project sites

#### Public Meeting Series #2

### Fall 2014

Select top stormwater retrofit project sites for potential design and construction

#### Public Meeting Series #3

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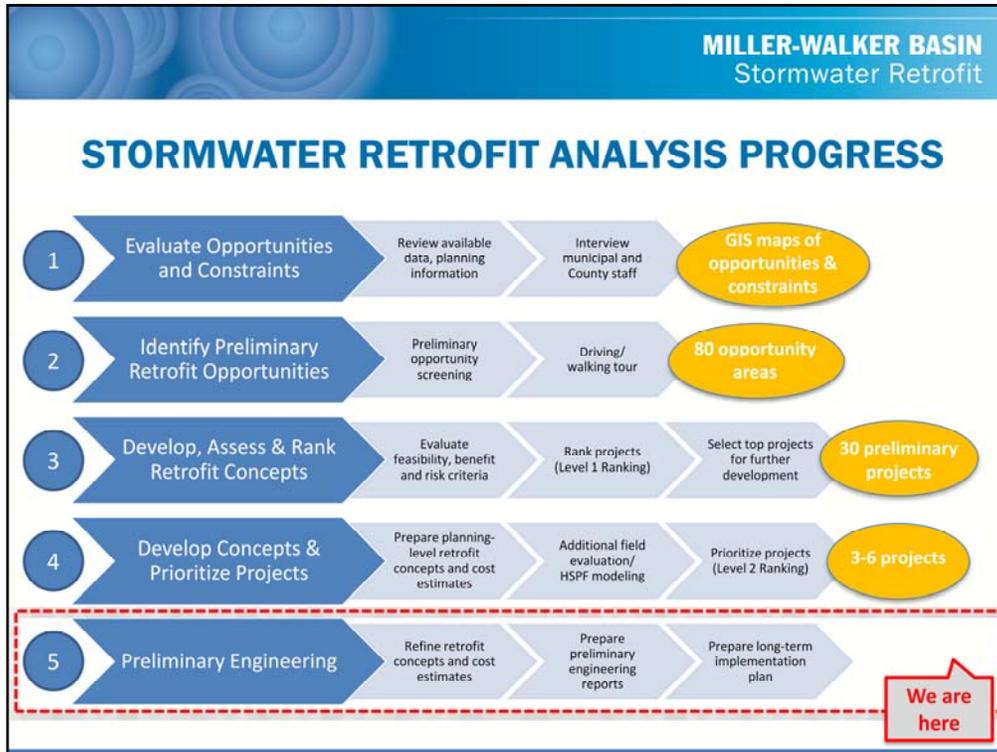
### Elissa Ostergaard

- Here is the overall schedule of the stormwater retrofit analysis we are conducting.
- Spring 2014:** We began this spring with investigating the soils, geology and other features that determine good locations for stormwater projects
- Summer 2014:** Over the summer, we worked to evaluate and prioritize which sites in the basin have the most potential for future stormwater retrofit projects.
- Fall 2014:** Since the last meeting, we continued to narrow down the number of project sites. Tonight we will share the results of the analysis with you. We also have some early design ideas for the top projects for you to provide your input.
- Once the analysis is complete, the basin partners could potentially move forward with designing and constructing the stormwater projects, depending on additional funding sources.



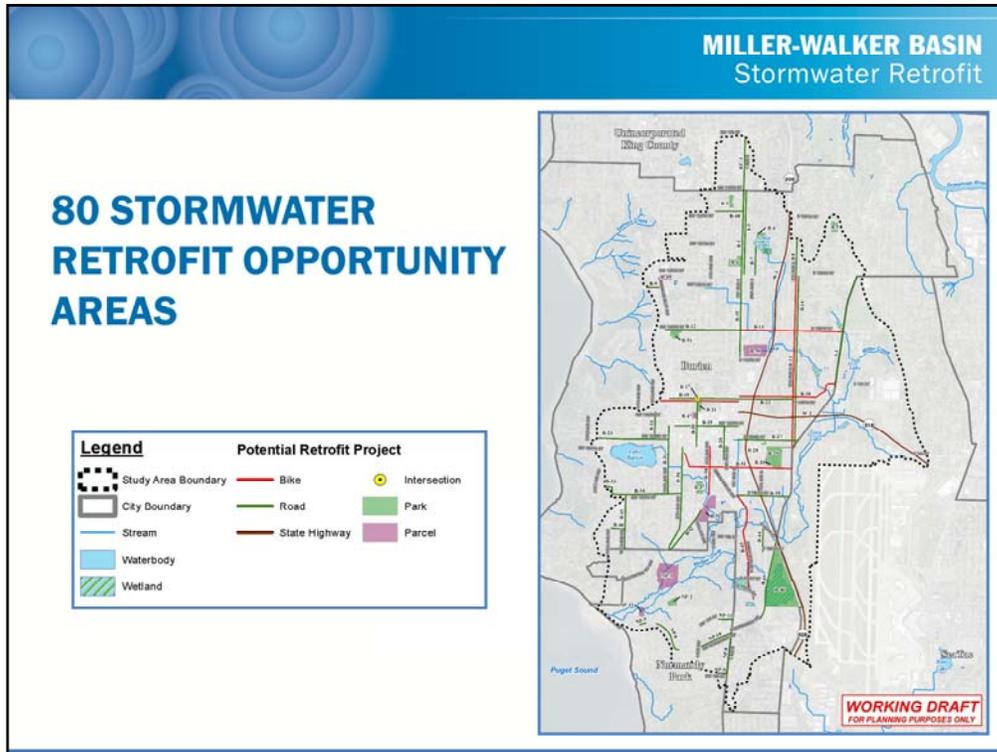
**Elissa Ostergaard**

•And now I'd like to turn it over to Robin Kirschbaum with HDR Engineering who is working with the Basin Partners to conduct our stormwater analysis. She will tell you more about our progress so far and how we've identified potential stormwater retrofit projects.



### Robin Kirschbaum

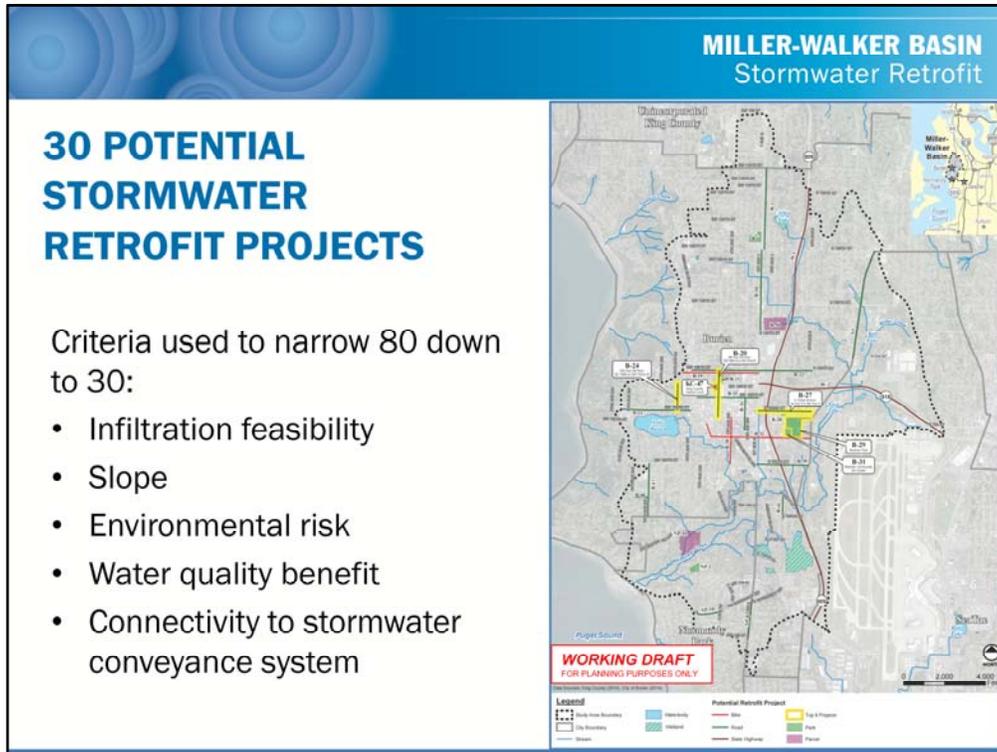
- Before we get into the details of the analysis, I want to share with you an overview of the steps we are taking to identify opportunities for improving stormwater quality.
- Last time we met, we had just completed Step 3, so at that point we had evaluated opportunities and constraints, identified 80 preliminary retrofit opportunity areas and narrow those to the 30 top-ranked projects to look at more closely.
- Since then, we have conducted additional analysis and applied a second set of criteria to rank the sites. We selected the top six stormwater retrofit projects to take into the next round of pre-design and preliminary engineering. As we continue to refine the early designs, we are in step 5 – the final step in the process.  
[Additional information as necessary re: the 24 projects that are not ultimately selected]



**Robin Kirschbaum**

•We started the evaluation with the 80 stormwater retrofit opportunity areas within the basin displayed in this map.

[Additional information as necessary re: how the opportunity areas were identified]



### Robin Kirschbaum

•We narrowed the 80 opportunity areas shown on the previous slide to the 30 potential stormwater retrofit projects displayed on this map. How did we do that?

•The main criteria used to rank the sites included:

- Infiltration feasibility – how effectively the area’s soil can absorb water
- Slope – the gradient of the area, which can affect its infiltration rate.
- Environmental risk – proximity of area to wetlands, floodplains, cliffs or other hazardous areas
- Water quality benefit – ability of area to filter stormwater and reduce runoff
- Connectivity to existing stormwater conveyance system – proximity of area to existing infrastructure that can efficiently transport stormwater if needed to prevent flooding and other problems

## 6 POTENTIAL STORMWATER RETROFIT SITES

Criteria used to narrow 30 down to 6:

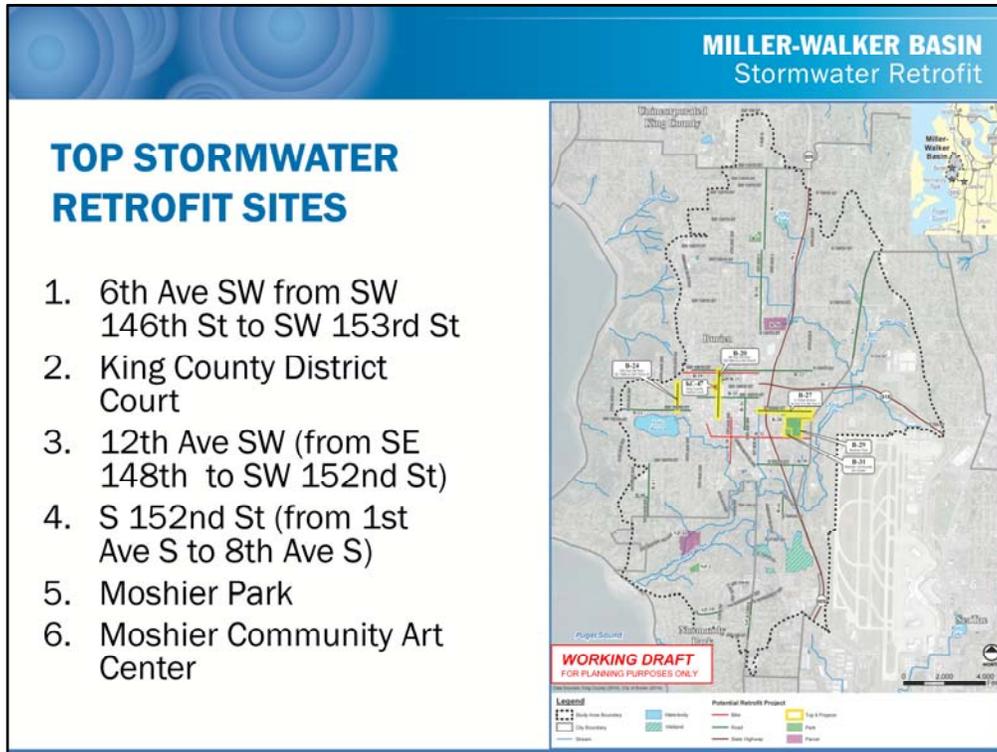
- Stream flow benefit
- Available space
- Public property
- Constructability
- Ease of funding
- Property risk
- Total area of stormwater management
- Educational opportunities
- Coordination with currently planned projects

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### **Robin Kirschbaum**

•Here is the criteria we used to rank the 30 potential stormwater projects and narrow them down to the six projects for design.

- Stream flow benefit – indicates the level of improvement the project will provide for local stream flow
- Available space – total amount of space available for the project’s footprint
- Public property – whether or not the project is on public property
- Constructability – how easy it would be to construct a project in that location
- Ease of funding – how easy it would be to maintain the project site over the long-term
- Property risk – how easy it would be to access the property
- Total area of stormwater management – capacity of project to slow stormwater flows
- Educational opportunities – whether or not a project is visible enough to the public for potential educational signage
- Coordination with planned projects – ease of combining the project with an already planned bike or pedestrian improvement project so that construction can be completed at the same time



**Robin Kirschbaum**

- So, out of the 30 projects studied, what are the top 6 contenders?
- This map highlights the top 6 sites. Note, all of these sites are located in Burien.
- The project sites include:
  1. 6th Ave SW from SW 146th St to SW 153rd St
  2. King County District Court
  3. 12th Ave SW (from SE 148th to SW 152nd St)
  4. S 152nd St (from 1st Ave S to 8th Ave S)
  5. Moshier Park
  6. Moshier Community Art Center

•<<Use laser pointer to highlight locations of each site>>

**MILLER-WALKER BASIN  
STORMWATER RETROFIT PROJECT**

**6TH AVE SW  
FROM SW 146TH ST TO SW 153RD ST**  
BURIEN SITE #20

**Proposed Concept**



**Typical BMP Concepts**



**A Curb Bulb-out Bioretention**



**B Permeable Pavement Parking**



**D Open Space Bioretention**



**C Permeable Concrete Sidewalks**



WORKING DRAFT FOR PLANNING PURPOSES ONLY

**Robin Kirschbaum**

# MILLER-WALKER BASIN STORMWATER RETROFIT PROJECT

KING COUNTY DISTRICT COURT  
(601 SW 149TH ST & 14905 6TH AVE SW)  
KING COUNTY SITE #47

## Proposed Concept



## Typical BMP Concept



Open Space Bioretention



Project Vicinity



WORKING DRAFT FOR PLANNING PURPOSES ONLY

Robin Kirschbaum

# MILLER-WALKER BASIN STORMWATER RETROFIT PROJECT

12TH AVE SW  
FROM SW 148TH ST TO SW 152ND ST  
BURJEN SITE #24

## Proposed Concept



## Typical BMP Concepts



A Curb Bulb-out Bioretention



B Permeable Pavement Parking



C Permeable Concrete Sidewalks



D Permeable Concrete Bike Lanes



Project Vicinity



WORKING DRAFT FOR PLANNING PURPOSES ONLY

Robin Kirschbaum

**MILLER-WALKER BASIN  
STORMWATER RETROFIT PROJECT**

**S 152ND ST  
FROM 1ST AVE S TO 8TH AVE S**  
BURIEN SITE #27

**Proposed Concept**



**Typical BMP Concepts**



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**Robin Kirschbaum**

**MILLER-WALKER BASIN  
STORMWATER RETROFIT PROJECT**

**MOSHIER PARK &  
MOSHIER COMMUNITY ART CENTER**  
BURDEN SITES #29 & #31

**Proposed Concept**

**Typical BMP Concepts**

- A** Underground Storage
- B** Permeable Parking
- C** Bioretention Swale
- D** Downspout Rain Garden
- E** Large Trees in Silva Cells
- F** Green Roof

**Project Vicinity**

**Green Roof**

**Large Trees in Silva Cells**

Logan County, Colorado, and other partner logos are shown at the bottom left.

**WORKING DRAFT FOR PLANNING PURPOSES ONLY**

Robin Kirschbaum

## **NEXT STEPS**

**Robin Kirschbaum**

- So, what's next? I'm going to hand it over to Elissa to talk about next steps.

## PROJECT SCHEDULE

### Spring 2014

Identify potential stormwater retrofit project sites

#### Public Meeting Series #1

### Summer 2014

Evaluate and rank stormwater retrofit project sites

#### Public Meeting Series #2

### Fall 2014

Select top stormwater retrofit project sites for potential design and construction

#### Public Meeting Series #3

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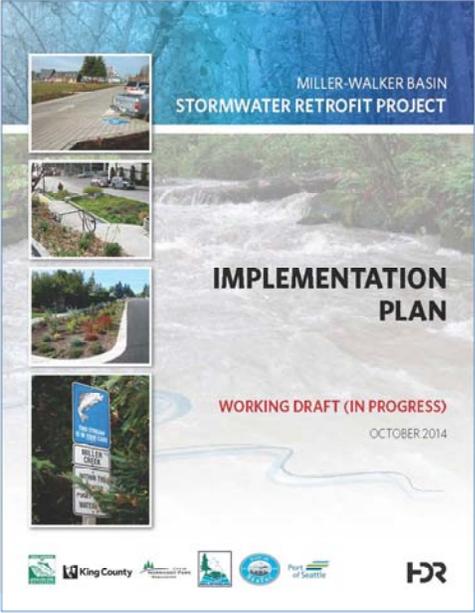
### Elissa Ostergaard

- Thank you, Robin.
- Again, here's an overview of the analysis' schedule.
- Tonight we shared the top stormwater retrofit project sites which is the last step in the process
- Depending on additional funding sources and coordination opportunities, the Basin Partners could then potentially move forward with fully designing and constructing these stormwater projects.
- The jurisdiction where the project is going to be built will be responsible for finding funding for design and construction, and for deciding whether to move forward or not. Burien will be responsible for five of the projects and King County for one.

**MILLER-WALKER BASIN**  
Stormwater Retrofit

## IMPLEMENTATION PLAN

- Finalized by  
January 31, 2015



MILLER-WALKER BASIN  
STORMWATER RETROFIT PROJECT

**IMPLEMENTATION  
PLAN**

WORKING DRAFT (IN PROGRESS)  
OCTOBER 2014

King County Snohomish County City of Seattle HDR

**Elissa Ostergaard**

- The plans presented tonight will be included in an Implementation Plan that will be finalized by January 31, 2015.

## **OPPORTUNITIES FOR PUBLIC INPUT**

- Complete a comment card tonight
- Share your feedback with the project staff

**Elissa Ostergaard**

•We want to hear what you think of these project sites! Please complete a comment form tonight or share your feedback with a member of the project team during the open house after the presentation.

## QUESTIONS?



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**Elissa Ostergaard**

- Do you have any questions about the initial designs presented tonight?

## **CONTACT US**

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**Search “Miller-Walker” at [kingcounty.gov](http://kingcounty.gov)**

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### **Elissa Ostergaard**

- Please feel free to contact us in the future with ideas or questions. If you have comments on this analysis or our presentation, please fill out one of the comment forms.
- Thanks again!