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# **2013 Post Construction Monitoring Report King County Multiple Stormwater Facility Retrofits**

**DOE Stormwater Retrofit Grant  
Grant Agreement Number G1100216**

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November 14, 2013

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2013 Post Construction Monitoring Report  
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**Table of Contents**

Introduction.....	3
Shadow Ridge D91750 .....	3
Kirkland Short Plat D92308.....	5
Aspenwood Tract H D91708 .....	6
Aspenwood Tract I D91705.....	7
Aspenwood Tract J D91706.....	8
Aspenwood Tract K D91707 .....	9
Aspenwood Tract L D91704.....	10
Aspenwood Tract M D91703.....	11
Summary .....	12

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## Introduction

King County received a grant from the State of Washington Department of Ecology to retrofit stormwater facilities owned and operated by King County. These retrofit projects address facility performance deficiencies. These facilities include a mix of stormwater detention and treatment facilities that were constructed by past subdivision development projects to mitigate the flow and water quality impacts of land development.

King County constructed nine stormwater facility retrofit projects in 2012. Eight of the retrofit projects are biofiltration swales (bioswales). The grant agreement requires field check, and report of the results and recommendation of the bioswale retrofit sites after one wet season. These eight bioswale retrofit projects have gone through one wet season of operation. This report includes the photographs and summary of field check of each bioswale site to evaluate the success of the retrofit improvement. All of the bioswales were field checked by Cody Toal, Environmental Scientist, on August 28, 2013.

## Shadow Ridge D91750

The Shadow Ridge D91750 bioswale was planted with a total of 1028 emergent plugs including 5 different species. Plant survival is variable throughout the swale. In the first cell closest to the inlet, survival and cover is close to 100%. All species survived in this cell. The second cell splits into two flow paths. Here survival and cover is closer to 40%. Definitely not as high as the first cell. Here the slough sedge and small fruited bulrush did well but not the mannagrass. This swale is very shady and there was a thick covering of Big Leaf Maple leaves for most of the winter and spring growing season. Both of these factors may have contributed to the low survivorship. Recommend planting approximately 200 additional emergent plugs to fill the gaps in the vegetation or it just may fill in on its own over time. No rivulets or avulsions have formed in the substrate. Both inlet and outlet are clear.

### Shadow Ridge D91750 Upper Cell





2013 Post Construction Monitoring Report  
King County Multiple Stormwater Retrofits

Shadow Ridge D91750 Lower Split Cells



Shadow Ridge D91750 Lower Split Cells





## Kirkland Short Plat D92308

The Kirkland Short Plat D92308 bioswale was planted with a total of 700 emergent plugs including 6 different species. Project location is moderately sunny. Plant survival is close to 100% and cover is very good throughout the swale. No supplemental planting is needed. Swale appears to be functioning as designed. Both inlet and outlet are clear. There are some cattails in the swale, as well as some alder saplings and blackberry that could be removed with routine maintenance.

Kirkland Short Plat looking towards inlet



Kirkland Short Plat looking towards outlet



## Aspenwood Tract H D91708

The Aspenwood Tract H D91708 bioswale was planted with a total of 1500 emergent plugs including 10 different species. This swale is very sunny. The swale and surrounding area have been recently mowed and maintained. Plant survival and cover is over 85%. No supplemental planting is needed. No rivulets or avulsions have formed in the substrate. The swale appears to be functioning as designed. Both inlet and outlet are clear.

Aspenwood Tract H D91708





## Aspenwood Tract I D91705

The Aspenwood Tract I D91705 bioswale was planted with a total of 2000 emergent plugs including 8 different species. This swale is very sunny. The swale and surrounding area have been recently mowed and maintained. Plant survival and cover is over 75%. No supplemental planting is needed. No rivulets or avulsions have formed in the substrate. Water is ponded or very low flow in the swale. The swale appears to be functioning as designed. Both inlet and outlet are clear.

Aspenwood Tract I D91705





## Aspenwood Tract J D91706

The Aspenwood Tract J D91706 bioswale was planted with a total of 1050 emergent plugs including 9 different species. The surrounding area has been recently mowed and maintained but swale itself was not mowed. Plant survival and cover is over 75%. No supplemental planting is needed. Some Arrowroot and exotic grasses have mixed in with the native plants. No rivulets or avulsions have formed in the substrate. Open water is ponded in two locations near the inlet and one near the flow spreader. Swale appears to be functioning as designed. Both inlet and outlet are clear. Purple loosestrife is present in the pond above the swale.

Aspenwood Tract J D91706



Aspenwood Tract J D91706





## Aspenwood Tract K D91707

The Aspenwood Tract K D91707 bioswale was planted with a total of 1550 emergent plugs including 10 different species. Both the surrounding area and swale have recently been mowed and maintained. Plant survival and cover is over 85%. No supplemental planting is needed. Some Arrowroot and exotic grasses have mixed in with the native plants. No rivulets or avulsions have formed in the substrate. The swale appears to be functioning as designed. Both inlet and outlet are clear.

Aspenwood Tract K D91707



## Aspenwood Tract L D91704

The Aspenwood Tract L D91704 bioswale was planted with a total of 1200 emergent plugs including 9 different species. The surrounding area has been recently mowed and maintained but the swale itself was not mowed. Plant survival and cover is close to 100%. No supplemental planting is needed. Some Cattail, Arrowroot, treefoil and exotic grasses have mixed in and are competing with the native plants. No rivulets or avulsions have formed in the substrate. The swale appears to be functioning as designed. Both inlet and outlet are clear.

### Aspenwood Tract L D91704





2013 Post Construction Monitoring Report  
King County Multiple Stormwater Retrofits

### Aspenwood Tract M D91703

The Aspenwood Tract M D91703 bioswale was planted with a total of 1850 emergent plugs including 10 different species. The swale and surrounding area have recently been mowed and maintained. Plant survival and cover is over 85%. There are a few bare spots that could use a small supplemental planting. No rivulets or avulsions have formed in the substrate. Swale appears to be functioning as designed. Both inlet and outlet are clear.

Aspenwood Tract M D91703



Aspenwood Tract M D91703



2013 Post Construction Monitoring Report  
King County Multiple Stormwater Retrofits

**Summary**

King County constructed eight bioswale stormwater facility retrofit projects in 2012. Overall, the retrofit facilities are functioning as designed. All of the bioswale facilities had clear inlets and outlet pipes. These bioswale facility retrofit projects are functioning well and no further action is recommended.