

March 30, 2016

Ms. Jennifer Schroder
Mr. Jon Regala
City of Kirkland
Parks and Community Services Department and Planning Department
123 Fifth Avenue
Kirkland, WA 98033-6189

RE: I-405, SR 520 to SR 522 Stage 1 (Kirkland Stage 1) (Forbes Lake East)
Mitigation Site
City of Kirkland Permit LSM05-00017

To whom it may concern,

The Washington State Department of Transportation completed qualitative monitoring of the I-405 Lake Forbes East mitigation site on June 30, 2016, to address Year-10 (2017) performance standards and one Year-3 (2011) performance standard. Monitoring activities included vegetation observations and photo documentation. This Year-8 report is being issued for compliance with the reporting requirements of the Land Surface Modification Permit – City of Kirkland Permit Number LSM05-00017.

General Site Information			
USACE NWP IP Number	200401410		
City of Kirkland Permit Number	LSM05-00017		
Mitigation Location	East of Forbes Lake in Kirkland, King County		
LLID Number	1221766476864		
Construction Date	2007-2008		
Monitoring Period	2008-2017		
Year of Monitoring	8 of 10		
Type of Impacts	Wetland	Buffer	
Area of Project Wetland Impact	1.56 acres	2.91 acres	
Type of Mitigation	Wetland Establishment	Wetland Enhancement	Preservation
Area of Mitigation¹	0.14 acre	0.72 acre	3.22 acres

¹ Additional wetland acreage provided by two other mitigation sites, including I-405 Forbes Lake West and I-405 Thrasher's Corner.

Site development:

The woody vegetation in both the wetland and buffer is well established. The site is currently meeting the native woody vegetative performance criteria and all of the relative cover performance criteria. The emergent zone is thriving as well despite concerns regarding the water depth and the extent of the emergent area.

Performance Standards (Year 10)	2015 Results	Management Activities
Aerial cover of native woody species will be at least 80 percent in the forested and scrub-shrub wetlands, of this area no more than 30 percent will be volunteer red alder (<i>Alnus rubra</i>).	90-95% cover of native woody vegetation. < 30% cover of red alder	
At least three native, non-invasive facultative or wetter plant species will achieve a minimum of 8 percent relative cover for each species in the emergent wetland zone by Year 10.	6 native herbaceous species provide 8% or more relative cover	
At least three native, non-invasive facultative or wetter plant species will achieve a minimum of 10 percent relative cover for each species in the forested and scrub-shrub wetland zones by Year 10.	3-5 native woody species provide 8% or more relative cover	
Species identified as King County-listed noxious and obnoxious weeds, including, but not limited to, reed canarygrass, non-native blackberries, purple loosestrife, Scot's broom, and Japanese knotweed will not exceed 20 percent aerial cover in the wetland creation areas. If this cover threshold is exceeded, weed control measures will be implemented. Emergent areas will be planted with trees and shrubs if invasive plant management is unsuccessful in the emergent zones.	3% cover of target invasive and noxious species	
Performance Standards (Year 3)	2015 Results	Management Activities
After three years, aerial cover of emergent (facultative and wetter) plant species will be at least 80 percent in the emergent wetland zone.	85-95% cover in area developed as emergent. 40% with open water included.	

Results for Performance Standard 1

(After 10 years, aerial cover of native woody species will be at least 80 percent in the forested and scrub-shrub wetlands, of this area no more than 30 percent will be volunteer red alder):

Native woody cover in the forested and scrub/shrub wetland was visually estimated at 90-95%. The cover in these areas is dominated by willows (*Salix spp.*) and cover of red alder (*Alnus rubra*) is less than 30%.

Results for Performance Standard 2

(At least three native, non-invasive facultative or wetter plant species will achieve a minimum of 8 percent relative cover for each species in the emergent wetland zone):

The following species have achieved at least eight percent cover in 2014. Species composition has change little in the interim: soft rush (*Juncus effusus*), marsh seedbox (*Ludwigia palustris*), needle spikerush (*Eleocharis acicularis*), woolgrass (*Scirpus cyperinus*), tapertip rush (*Juncus acuminatus*), and jointleaf rush (*Juncus articulatus*).

Results for Performance Standard 3

(At least three native, non-invasive facultative or wetter plant species will achieve a minimum of 5 percent relative cover for each species in the emergent wetland zone):

Soft rush, small-fruited bulrush (*Scirpus microcarpus*), broadleaf cattail (*Typha latifolia*), and American speedwell (*Veronica americana*) are estimated to each have a minimum of five percent relative cover. The total emergent cover is estimated to be 90 percent.

Results for Performance Standard 4

(Species identified as King County-listed noxious and obnoxious weeds, including, but not limited to, reed canarygrass, non-native blackberries, purple loosestrife, Scot's broom, and Japanese knotweed will not exceed 20 percent cover in the wetland creation areas):

The cover of noxious weeds in the wetland creation areas was visually estimated at 3 percent. This cover was primarily of American white waterlily (*Nymphaea odorata*), along with small amounts of reed canarygrass (*Phalaris arundinacea*), Himalayan blackberry (*Rubus armeniacus*), and paleyellow iris (*Iris pseudacorus*).

Results for Performance Standard 5

(Native facultative or wetter emergent species will achieve 80% cover)

Approximately one-third of the intended emergent area has developed as open water/aquatic bed. In the area that has developed as emergent wetland, cover of emergent plant species was visually estimated at 85-90% and consists of a diverse mix of native species dominated by broadleaf cattail (*Typha latifolia*), soft rush (*Juncus effusus*), and woolgrass (*Scirpus cyperinus*). The area that has developed as open water/aquatic bed has a visually-estimated 5-10 percent cover of the class-C noxious weed American white waterlily (*Nymphaea odorata*).



Photo 1 – Facultative and wetter species in the emergent zone

We welcome your questions or comments. Please contact me at 360/570-2579 or by e-mail at littaud@wsdot.wa.gov for questions about these mitigation sites.

Sincerely,

Doug Littauer
Wetlands Program

AS-BUILT

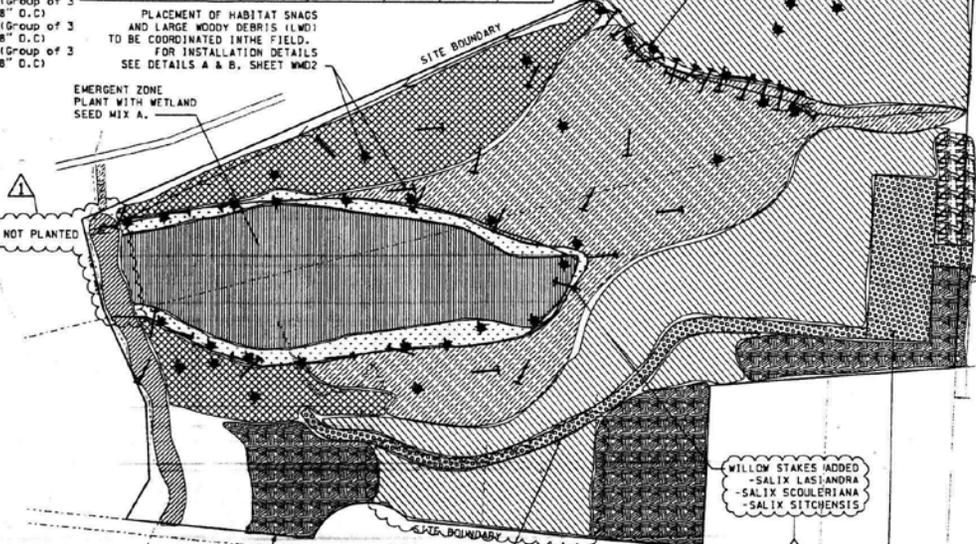
PLANTING SCHEDULE

SCIENTIFIC NAME	COMMON NAME	QTY	SIZE	SPACING/NOTES
EMERGENT WETLAND EDGE				
<i>Carex leptocarpus</i>	Shore Sedge	218	10" PLUGS	3' O.C.
<i>Carex rostrata</i>	Beaked Sedge	653	10" PLUGS	3' O.C.
<i>Juncus acuminatus</i>	Tapered Rush	653	10" PLUGS	3' O.C.
<i>Scirpus microcarpus</i>	Small-fruited Bulrush	653	10" PLUGS	3' O.C.
Zone A Emergent Seed Mix		5000 SF		
SCRUB SHRUB WETLAND PLANTS				
<i>Cornus stolonifera</i>	Red-Osier Dogwood	144	1 GAL.	5' O.C.
<i>Malus fusca</i>	Oregon Crabapple	72	1 GAL.	5' O.C.
<i>Physocarpus capitatus</i>	Pacific Ninebark	144	1 GAL.	5' O.C.
<i>Rosa nutkana</i>	Nootka Rose	287	1 GAL.	4' O.C.
<i>Rubus spectabilis</i>	Salmonberry	215	1 GAL.	4' O.C.
<i>Salix sitchensis</i>	Sitka Willow	645	L.S. 0.75-1.25" DIAM. X 18" LONG	3' O.C. (Group of 3 stakes 18" O.C.)
<i>Salix lasioandra</i>	Pacific Willow	645	L.S. 0.75-1.25" DIAM. X 18" LONG	3' O.C. (Group of 3 stakes 18" O.C.)
<i>Salix scouleriana</i>	Scouler's Willow	432	L.S. 0.75-1.25" DIAM. X 18" LONG	3' O.C. (Group of 3 stakes 18" O.C.)
UPLAND BUFFER PLANTS				
<i>Acer circinatum</i>	Vine Maple	340	1 GAL.	5' O.C.
<i>Acer macrophyllum</i>	Bigleaf Maple	210	2 GAL.	9' O.C.
<i>Corylus cornuta</i>	Black Cottonwood	340	1 GAL.	5' O.C.
<i>Populus balsamifera</i>	Black Cottonwood	105	2 GAL.	9' O.C.
<i>Pseudotsuga menziesii</i>	Douglas Fir	420	2 GAL.	9' O.C.
<i>Ribes sanguineum</i>	Red-flowering Currant	340	1 GAL.	5' O.C.
<i>Sambucus racemosa</i>	Red Elderberry	340	1 GAL.	5' O.C.
<i>Rosa nutkana</i>	Nootka Rose	1019	1 GAL.	4' O.C.
<i>Symphoricarpos albus</i>	Snowberry	1019	1 GAL.	4' O.C.
<i>Thuja plicata</i>	Western Redcedar	315	2 GAL.	9' O.C.
WETLAND FOREST PLANTS				
<i>Fraxinus latifolia</i>	Oregon Ash	61	2 GAL.	9' O.C.
<i>Picea sitchensis</i>	Sitka Spruce	91	2 GAL.	9' O.C.
<i>Populus balsamifera</i>	Black Cottonwood	61	2 GAL.	9' O.C.
<i>Physocarpus capitatus</i>	Pacific Ninebark	390	1 GAL.	5' O.C.
<i>Rosa nutkana</i>	Nootka Rose	98	1 GAL.	4' O.C.
<i>Rubus spectabilis</i>	Salmonberry	487	1 GAL.	4' O.C.
<i>Thuja plicata</i>	Western Redcedar	91	2 GAL.	9' O.C.
ENHANCED UPLAND FOREST PLANTS				
<i>Acer macrophyllum</i>	Bigleaf Maple	21	1 GAL.	18' O.C.
<i>Pseudotsuga menziesii</i>	Douglas Fir	21	1 GAL.	18' O.C.
<i>Symphoricarpos albus</i>	Snowberry	216	1 GAL.	10' O.C.
<i>Sambucus racemosa</i>	Red Elderberry	54	1 GAL.	10' O.C.
<i>Thuja plicata</i>	Western Redcedar	21	1 GAL.	18' O.C.
<i>Tsuga heterophylla</i>	Western Hemlock	21	1 GAL.	18' O.C.
LAKESHORE				
<i>Cornus stolonifera</i>	Cornus stolonifera	58	1 GAL.	5' O.C.
<i>Physocarpus capitatus</i>	Pacific Ninebark	44	1 GAL.	5' O.C.
<i>Salix lasioandra</i>	Pacific Willow	44	L.S. 0.75-1.25" DIAM. X 18" LONG	3' O.C.
<i>Salix scouleriana</i>	Scouler's Willow	146	L.S. 0.75-1.25" DIAM. X 18" LONG	3' O.C.
<i>Salix sitchensis</i>	Sitka Willow	120	L.S. 0.75-1.25" DIAM. X 18" LONG	3' O.C.
Zone A Emergent Seed Mix		3600 SF		
EMERGENT WETLAND - ZONE A - 24,063 SF				
<i>Carex utriculata (rostrata)</i>	Beaked Sedge	Seed		APPLICATION RATE
<i>Eleocharis palustris</i>	Common Spikerush	Seed		15 lbs/acre
<i>Glycerhiza elata</i>	Tall Mangrass	Seed		
<i>Scirpus lacustris ssp. acutus</i>	Hardstem Bulrush	Seed		
<i>Scirpus microcarpus</i>	Small-fruited Bulrush	Seed		
STABILIZED ACCESS - ZONE C - 9,668 SF				
Commercial erosion control mix				

FORBES LAKE EAST

PLANTING ZONE	AREA (SF)	BOTTOM ELEVATION RANGES	AVERAGE WATER	EXPECTED HIGH WATER	EXPECTED LOW WATER
EMERGENT WETLAND ZONE A	24,063	246-247	247.3	249	247
LAKESHORE	3,588	247-247.3	247.3	249	247
EMERGENT WETLAND EDGE	6,590	247-247.3	247.3	249	247
SCRUB SHRUB WETLAND	40,516	247.3-248	247.3	249	247
WETLAND FOREST	20,737	247.3-248	247.3	249	247
UPLAND BUFFER	62,506	N/A	N/A	N/A	N/A

PLACEMENT OF LARGE WOODY DEBRIS (LWD) TO BE COORDINATED IN THE FIELD. ROOT WADS AND LARGER PIECES OF WOODY DEBRIS SHALL BE INTERMINGLED TO DEVELOP DIVERSE HABITAT STRUCTURES. FOR LOG AND STUMP PLACEMENT IN STREAMS, SEE TYPICAL LOG AND STUMP EMBEDEDMENT DETAILS, SHEET WM03



CONSTRUCTION ACCESS ROUTE TO REMAIN BASE MATERIAL TO BE QUARRY SPALLS

CONSTRUCTION STAGING AREA TO REMAIN BASE MATERIAL TO BE QUARRY SPALLS

HABITAT LEGEND

- (32) = HABITAT SNAG
- (37) = LARGE WOODY DEBRIS
- (4) ROOT WADS IN STREAM
- * LOCATION TO BE DETERMINED ON SITE

PLANT SPECIES ADDED IN THIS AREA: RUBUS SPECTABILIS, PICEA SITCHENSIS, TSUGA HETEROPHYLLA

WILLOW STAKES ADDED - SALIX LASIANDRA, SALIX SCOULERIANA, SALIX SITCHENSIS

SCALE IN FEET
0 40 80

WETLAND MITIGATION AND BASE INFORMATION PROVIDED BY WSDOT AS PART OF APPENDIX W2 REQUEST FOR PROPOSAL, REVISED APPENDUM 5 DATED AUGUST 23, 2008

FILE NAME	R:\60003341 Kirkland DB\Cadd\Record Drawings\Sheets\30.WetlandMitigation\PlantingPlan\FPE_WM08.dgn	REG. NO.	10 WASH	FED. AID PROJ. NO.	
TIME	4:11:32 PM	JOB NUMBER			
DATE	1/31/2008	CONTRACT NO.			
DESIGNED BY	Schroeder N	LOCATION NO.			
ENTERED BY	B. TAYLOR				
CHECKED BY	D. NYERS				
PROJ. ENGR.	AS-BUILT	DATE	12/04/07	BY	YJ
REGIONAL ADM.	EARLY RFC SUBMITTAL	DATE	3/16/06	BY	
	REVISION	DATE		BY	

FORBES LAKE EAST

I-405
SR 520 TO SR 522

STAGE 1

PLANTING PLAN

Kiewit
DMJM HARRIS | AECOM
amec

WM- SHEET