WETLAND BUFFER ENHANCEMENT/RESTORATION YEAR 2 MONITORING REPORT

SLAG DISPOSAL, BECKWITH PROPERTY SITE

SOUTH 218TH STREET AND 90TH AVENUE SOUTH

KENT, WASHINGTON

Prepared for

Farallon Consulting L.L.C.

975 5th Avenue NW

Issaquah, Washington 98027

Prepared by

Anchor QEA, LLC

720 Olive Way, Suite 1900

Seattle, Washington 98101

November 2013

TABLE OF CONTENTS

List of Tables

List of Figures

List of Appendices

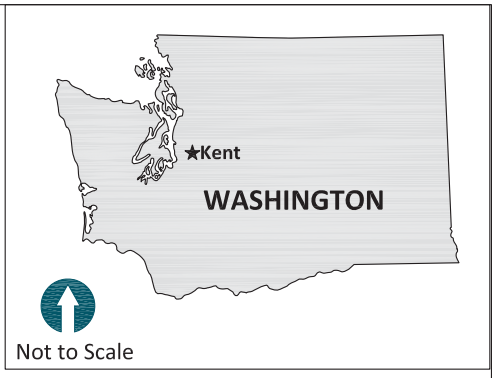
1 INTRODUCTION

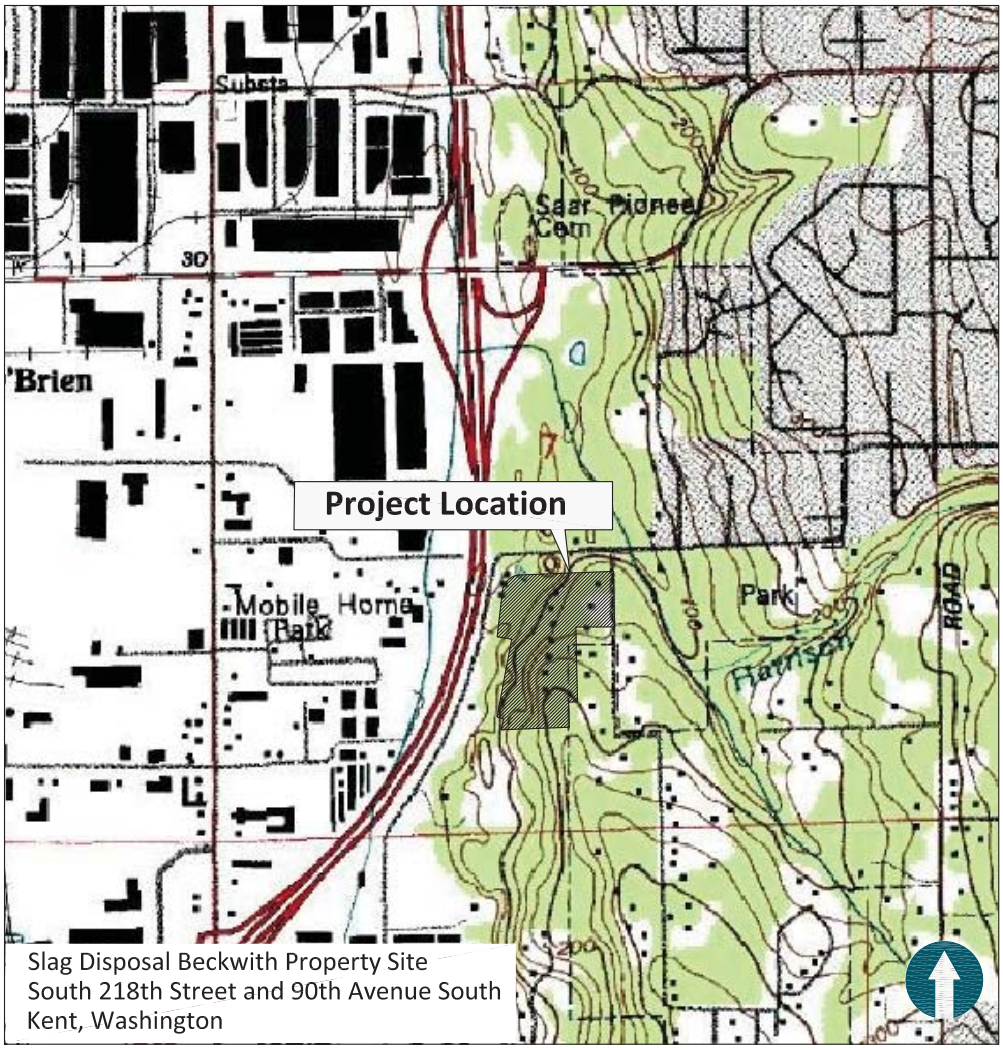
This *Wetland Buffer Enhancement/Restoration Year 2 Monitoring Report* presents the 2013 Year 2 monitoring results for the Slag Disposal Project (Project) wetland buffer enhancement/restoration. Wetland buffer restoration was implemented in accordance with the approved *Wetland Buffer Enhancement/Restoration Plan* (Anchor QEA 2010a) for wetland buffer impacts associated with the Project. The *Wetland Buffer Enhancement/ Restoration Plan* provided information necessary for code compliance and grading permit approval by the City of Kent (City). The wetland buffer enhancement/restoration planting area for the Project is located on an approximately 4.7-acre parcel of land located in the City of Kent, King County, Washington (Township 22 North, Range 5 East, Section 7). The Project site is located on the east side of Highway 167 at the intersection of South 218th Street and 88th Avenue South (Figure 1).

The purpose of this *Wetland Buffer Enhancement/Restoration Year 2 Monitoring Report* is to document Year 2 monitoring conditions and to serve as Year 2 conditions from which future monitoring can be compared.

Documentation of Year 2 monitoring conditions contained in this report includes a narrative of monitoring observations, data collected during the site visit, and site photographs. Information from the approved *Wetland Buffer Enhancement/Restoration Plan* (Anchor QEA 2010a) and *Wetland Buffer Enhancement/Restoration As-Built Report* (Anchor QEA 2011a) is summarized or included by reference in this report. With the submittal of this report, reporting requirements will be complete for the Year 2 monitoring of the wetland buffer enhancement/restoration area. In accordance with the specifications and commitments outlined in the plan (Anchor QEA 2010a), a 3-year monitoring effort of the wetland buffer enhancement/restoration is underway and will continue through 2014. The wetland buffer enhancement/restoration drawings from the *Wetland Buffer Enhancement/ Restoration Plan* (Anchor QEA 2010a) are included in Appendix A. Year 2 monitoring site photographs are provided in Appendix B.

SOURCE: Base map prepared from Terrain Navigator Pro USGS 7.5 minute quadrangle map(s) of Kent, WA.





K:\Jobs\100224-EMJ Slag\100224-01\100224-RP-001.dwg Layout1

Oct 15, 2012 3:13pm bbermingham

Figure 1
Vicinity Map
Wetland Buffer Enhancement/Restoration Year 2 Monitoring Report
Kent Slag Site Excavation Project

ANCHOR QEA

2 PROJECT WETLAND BUFFER ENHANCEMENT/RESTORATION MONITORING BACKGROUND AND STATUS

Wetland buffer enhancement/restoration actions described in this report occur in two locations on site, identified as the Wetland I and Wetland M buffer areas. Wetland buffer enhancement/restoration implementation for the Project was completed in February 2011, the As-Built (Year 0) monitoring activities for the Project were completed in April 2011, and the Year 1 monitoring activities for the Project were completed in August 2012. The status of wetland buffer enhancement/restoration monitoring activities associated with the Project as of September 2013 is summarized in Table 1.

Table 1
Wetland Buffer Enhancement/Restoration Monitoring Status – September 2013

Restoration Element	Wetland Buffer Enhancement/ Restoration Schedule
Planting Completion	February 2011
As-Built (Year 0 Report)	April 2011
Year 1 Monitoring	August 2012
Year 2 Monitoring	August 2013
Year 3 Monitoring	Scheduled Summer/Fall 2014

2.1 Existing Information

Several reports and addenda have been completed relevant to wetland buffer enhancement/restoration activities for the Project. These documents provide a background summary of Project restoration activities. Information from these documents is included by reference in this report. These documents include:

- *South 224th Street Extension Wetland Technical Report* (ESA Adolfson 2006)
- *Beckwith Property Slag Disposal Site Wetland Delineation Report* (Springwood Associates, Inc. 1995)
- *Kent Slag Site Excavation Project Design Plans* (Farallon Consulting L.L.C. 2010a)
- *Cleanup Action Work Plan* (Farallon Consulting L.L.C. 2010b)
- *Wetland Buffer Enhancement/Restoration Plan* (Anchor QEA 2010a)
- *Wetland Buffer Planting Plan* (Anchor QEA 2010b)

- *Wetland Buffer Enhancement/Restoration Plan Addendum* (Anchor QEA 2010c)
- *Wetland Buffer Enhancement/Restoration As-Built Report* (Anchor QEA 2011a)
- *Inspection of Delivered Plants and Planting Procedures Field Report* (Anchor QEA 2011b)
- *Inspection of Planting Areas Field Report* (Anchor QEA 2011c)
- *Wetland Buffer Enhancement/Restoration Year 1 Monitoring Report* (Anchor QEA 2012)

3 WETLAND BUFFER ENHANCEMENT/RESTORATION GOALS AND OBJECTIVES

The goal of the wetland buffer restoration is to address replacement of wetland buffer functions impacted by the Project and to increase these functions at the Project site. To achieve this goal, wetland buffer enhancement/restoration included planting native vegetation to replace wetland buffer vegetation removed during construction. The impact area was dominated by grassland habitat with non-native shrub vegetation. Overall, impacted grassland habitat was replaced with native shrub and forested vegetation communities. The *Wetland Buffer Enhancement/Restoration Plan Drawings* are included in Appendix A.

Monitoring is performed to determine whether a project has met the ecological and functional goals of the design. To meet these goals, the following objectives were identified during the Project restoration planning process to compensate for loss and damage to the wetland buffer area:

- Provide demonstrable and qualitative replacements of functional elements of the natural system on the site
- Establish native wetland buffer plant communities by planting native species and removing invasive species
- Use native and naturalized plant species commonly found in wetland buffer habitats of the Pacific Northwest
- Simulate, with the plantings, Pacific Northwest native plant communities in terms of composition, cover, and structure
- Replace, at a ratio of at least 1:1, wetland buffer habitat lost due to Project impacts
- Remove any non-native invasive species, such as Scot's broom (*Cytisus scoparius*) and Himalayan blackberry (*Rubus armeniacus*), from the portion of Wetland I buffer bordering the portion to be enhanced/restored
- Plant 0.144 acre (6,260 square feet [sf]) of native vegetation associated with the wetland buffer of Wetland I in accordance with the *Wetland Buffer Planting Plan* (see Appendix A; this equates to slightly more than the 0.13 acre [5,440 sf] identified in the construction plans)
- Plant seven salmonberry shrubs in the approximately 0.006-acre (260-sf) area of wetland buffer for Wetland M in accordance with the plan addendum (Anchor QEA

2010c) for temporary buffer impacts that were not identified in the *Wetland Buffer Planting Plan* (see Appendix A)

- Adhere to performance standards as detailed in the Project wetland buffer enhancement/restoration plan (Anchor QEA 2010a)

4 MONITORING METHODS AND STANDARDS OF SUCCESS

The wetland buffer enhancement/restoration area was designed to function as a restored wetland buffer with plant communities similar to adjacent and existing systems that provide enhanced biological productivity and wildlife habitat. This restoration area will be evaluated on the success of the native plantings and forested and shrub native vegetation areal cover for 3 years after planting. Monitoring will also include photographic documentation of site features and the development of habitat on the site. Monitoring reports will be submitted annually to the City through 2014. The following sections provide information on the methods and standards of success for the wetland buffer enhancement/restoration area, as defined in the *Wetland Buffer Enhancement/Restoration Plan* (Anchor QEA 2010a).

4.1 Monitoring

Planting of the enhancement/restoration area was initiated and completed in February 2011 (Anchor QEA 2011b and 2011c). Species identified in the planting plan and planted in February 2011 are identified in Table 2.

Table 2
Plant Species Identified in the Wetland Buffer Planting Plan

Scientific Name	Common Name
Trees	
Acer macrophylum	Big-leaf maple
Alnus rubra	Red alder
Pseudotsuga menziesii	Douglas fir
Thuja plicata	Western red cedar
Shrubs	
Oemleria cerasiformis	Indian plum
Rosa nutkana	Nootka rose
Rubus spectabilis	Salmonberry
Symphoricarpos albus	Snowberry
Groundcover	
Polystichum munitum	Sword fern

Due to the relatively small size of the wetland buffer enhancement/restoration area (approximately 6,260 sf for Wetland I buffer and approximately 260 sf for Wetland M buffer), annual monitoring will include the entire enhancement/restoration area instead of being limited to sample plots within these small areas. Annual monitoring will take place near the end of the growing season (summer or early fall) prior to leaf drop.

Monitoring activities will focus on the collection of vegetation and wildlife data to evaluate, describe, and quantify (to the extent possible) wetland buffer functions and compliance with the performance measures. Monitoring will also include photographic documentation of site features and the development of habitat on the site. Specific monitoring methods are described as follows.

During the monitoring, areal cover of all planted and colonizing shrub and tree species within the wetland buffer enhancement/restoration area will be estimated and the number of shrubs and trees will be counted. Shrub and tree heights will be measured and averaged for each species. Plant heights that exceeded 7 feet will be estimated. General plant conditions will be evaluated.

Total shrub, tree, and overall herbaceous vegetation areal cover percentages will be estimated. A list of all colonizing species observed at the site during the monitoring will be recorded.

Using this information, annual growth and areal cover comparisons will be made. Monitoring visits will identify and record all tree and shrub species, whether planted or introduced since planting, and will record the areal cover of each species within the vegetative layers. Plant counts will be used to identify the survival of planted species and the colonization of additional species during the monitoring period.

The wetland buffer enhancement/restoration area was originally photographed from four designated photo point locations. To allow for growth comparisons from year to year and to provide a long-term photographic record, photographs will be taken during each monitoring period. Year 2 photographs are presented in Appendix B.

Wildlife observed during the monitoring site visits will be identified and recorded. Any breeding or nesting activity in the restoration area will be documented. No trapping or systematic surveys will be conducted. A cumulative list of all wildlife species observed in the restoration area during the monitoring periods will be presented.

Evidence of human intrusion and/or vandalism in the restoration area, if present, will be documented.

4.2 Performance Measures, Standards of Success, and Contingency Plans

Performance measures and success standards describe specific on-site characteristics that indicate a function is being provided. Performance measures are used to guide management of the restoration area. Success standards are thresholds to be measured during the monitoring period that demonstrate the restoration has complied with regulatory requirements and is providing intended functions. The enhancement/restoration will be monitored for 3 years to demonstrate that intended wetland buffer functions have been achieved. Specific performance measures and success standards will be the following:

- 20 percent cover of native trees, shrubs, and groundcover species after 1 year
- 50 percent cover of native trees, shrubs, and groundcover species after 2 years
- 80 percent cover of native trees, shrubs, and groundcover species after 3 years
- 80 percent survival of planted and colonizing native trees and shrubs after 3 years
- Less than 20 percent cover of invasive species

Contingency plans describe what actions can be taken to correct site deficiencies. If there is a significant problem with the enhancement/restoration area meeting its performance standards, a contingency plan will be developed. Contingency plans may include, but are not limited to, the following:

- Plant substitutions of type, species, quantity, and/or location
- Additional plant installation to address survival or cover problems
- Weeding and additional plant installation to address invasive weed cover
- Providing fencing or plant guards around plants to prevent animal damage

Contingency plans will be developed for review and approval by the City as appropriate. In addition, implemented contingency plans will be described in the monitoring report following each year's visit. Success of the wetland buffer enhancement/restoration will be based on the restoration goals, performance standards, and contingency measures.

5 YEAR 2 MONITORING RESULTS

5.1 Vegetation

5.1.1 Planted Vegetation

The site is planted with a variety of native plant species in approximate locations, as identified in the *Wetland Buffer Enhancement/Restoration Plan* (Anchor QEA 2010a) and *Wetland Buffer Enhancement/Restoration As-Built Report* (Anchor QEA 2011a). All planted species identified in the planting plan (Appendix A) and shown on Table 2 were observed within the restoration area. The overall condition of the planted species at the site ranges from good to poor. As described in the 2012 Year 1 report, in the Wetland I restoration area, several of the plants showed evidence of deer browsing and significantly fewer plants were identified during the 2012 Year 1 monitoring than were identified in the planting plan and As-Built report. During the 2013 Year 2 monitoring, the majority of the observed planted vegetation appeared to be in good health, and while some decrease in planted vegetation had occurred since the 2012 Year 1 monitoring, there was a much smaller decrease in the number of plants than was observed during the Year 1 monitoring. In the Wetland M restoration area, planted vegetation was in good health and all planted species were accounted for. Monitoring photographs from the wetland buffer plantings for Wetlands M and I are shown in Appendix B. Table 3 lists species composition and cover values of planted vegetation. Table 4 lists species composition and numbers of individual planted species. Average heights of planted trees and shrubs are provided in Table 5.

Table 3
Species Composition and Percentage of Areal Cover of Planted Vegetation

Species	Year 1 (2012)	Year 2 (2013)
Wetland I Buffer Area		
Trees		
Acer macrophylum	1%	1%
Alnus rubra	5%	5%
Pseudotsuga menziesii	5%	5%
Thuja plicata	5%	5%
Shrubs		
Oemleria cerasiformis	1%	1%
Rosa nutkana	10%	10%

Species	Year 1 (2012)	Year 2 (2013)
Rubus spectabilis	5%	5%
Symphoricarpos albus	15%	20%
Groundcover		
Polystichum munitum	5%	5%
Wetland M Buffer Area		
Shrubs		
Rubus spectabilis	20%	25%

Table 4

Species Composition and Numbers of Planted Vegetation

Species	Year 0 (2011)	Year 1 (2012)	Year 2 (2013)	Variation from Year 0 to Year 2
Wetland I Buffer Area				
Trees				
Acer macrophylum	9	3	3	-6
Alnus rubra	6	5	4	-2
Pseudotsuga menziesii	8	7	6	-2
Thuja plicata	5	3	3	-2
Total Trees	**28**	**18**	**16**	**-12**
Shrubs				
Oemleria cerasiformis	36	4	4	-32
Rosa nutkana	28	22	17	-11
Rubus spectabilis	45	19	14	-31
Symphoricarpos albus	35	30	30	-5
Total Shrubs	**144**	**75**	**65**	**-79**
Groundcover				
Polystichum munitum	147	26	17	-130
Total Groundcover	**147**	**26**	**17**	**-130**
Wetland M Buffer Area				
Shrubs				
Rubus spectabilis	7	10	10	3
Total Shrubs	**7**	**10**	**10**	**3**

Table 5

Average Height of Planted Trees and Shrubs

Species	Year 1 (2012) Height (feet)	Year 2 (2013) Height (feet)
Wetland I Buffer Area		
Trees		
Acer macrophylum	8.7	9.0
Alnus rubra	8.5	9.0
Pseudotsuga menziesii	7.5	7.9
Thuja plicata	5.9	6.0
Shrubs		
Oemleria cerasiformis	2.5	3.1
Rosa nutkana	3.9	4.6
Rubus spectabilis	1.3	2.0
Symphoricarpos albus	4.1	5.2
Groundcover		
Polystichum munitum	NA	NA
Wetland M Buffer Area		
Shrubs		
Rubus spectabilis	1.8	2.3

About 2 years after planting, individual tree plant species in the Wetland I buffer area showed trace (1 percent) to 5 percent areal cover, and shrub species showed 1 to 20 percent areal cover (see Table 3). Snowberry (*Symphoricarpos albus*) showed the highest areal cover at 20 percent, and Nootka rose (*Rosa nutkana*) showed 10 percent areal cover. In the Wetland M buffer area, salmonberry (*Rubus spectabilis*), the only planted species, had 25 percent areal cover.

The average height of tree and shrub species within the Wetland I buffer area ranged from 6.0 feet to greater than 9.0 feet for tree species and from 2.0 feet to 5.2 feet for shrub species. The average height of all planted trees and shrubs increased compared to the Year 1 monitoring results (see Table 5). The average height of salmonberry in the Wetland M buffer area was 2.3 feet, representing an increase of 0.5 feet since the Year 1 monitoring.

The condition of trees and shrubs within the Wetland I buffer area ranged from good to poor health. While many of the species appeared to be in good health, evidence of browsing by

deer continued to be present on several of the trees and shrubs. Within the Wetland M buffer area, planted shrubs were in good health with no evidence of browsing observed.

Planted tree and shrub species were counted for individual survival rates (see Table 4). The results of the 2013 Year 2 monitoring show that plant mortality has occurred in the Wetland I buffer area since the 2012 Year 1 monitoring was performed. The number of plants observed during the 2013 Year 2 monitoring decreased for two of the four tree species and two of the four shrub species. Overall, the number of total planted trees decreased from 18 plants in 2012 to 16 plants in 2013. The number of planted shrubs decreased from 75 plants in 2012 to 65 plants in 2013. While a decrease in planted vegetation did occur between the Year 1 and Year 2 monitoring, the decrease was significantly less than that observed between the 2011 as-built report and the 2012 Year 1 monitoring. As shown on Table 4, all four of the planted tree and shrub species showed a decrease in survival from the 2011 as-built report to the 2012 Year 1 monitoring. The planted groundcover species sword fern (*Polystichum munitum*) decreased from 26 plants in 2012 to 17 plants observed in 2013. However, as described in Section 5.1.3, similar to the 2012 Year 1 monitoring results, a very dense layer of colonizing herbaceous cover was present at the site, which may be concealing some of the planted sword fern. In the Wetland M buffer area, the number of planted salmonberry shrubs observed in the 2013 Year 2 monitoring was 10 plants, which is the same number that was observed during the 2012 Year 1 monitoring, due to three colonizing plants.

5.1.2 Colonizing Vegetation

Several tree and shrub species are colonizing the buffer restoration areas. In the Wetland I buffer area, a total of 38 red alder (*Alnus rubra*) and 23 Pacific willow (*Salix lasiandra*) saplings were documented during the 2013 Year 2 monitoring. A tree species not observed during the 2012 Year 1 monitoring was documented within the Wetland I buffer area during the 2013 Year 2 monitoring—Oregon ash (*Fraxinus latifolia*). Nine Oregon ash saplings were documented. The average height of colonizing red alder and Pacific willow was 2.8 feet with a range from 1.1 feet to 5.2 feet, which represents a significant increase from the 2012 Year 1 monitoring results. The average height of Oregon ash saplings was 0.7 feet with a range from 0.5 feet to 1.1 feet. Although the number of observed colonizing red alder and Pacific willow decreased from the 2012 Year 1 monitoring results, there was still a significant

number of colonizing trees occurring in the Wetland I restoration area, which is a positive element for the buffer restoration area. The decrease in colonizing tree saplings could be the result of deer browsing, as was described earlier to explain the reduction of planted vegetation. Colonizing shrub species observed within the Wetland I buffer area included the non-native species Himalayan blackberry, evergreen blackberry (*Rubus laciniatus*), Scot's broom, and butterflybush (*Buddleia davidii*). The number of butterflybush plants that were observed increased from 3 to 4 between the 2012 Year 1 and 2013 Year 2 monitoring. Conversely, the number of Scot's broom plants decreased from 5 to 3 since the Year 1 monitoring was performed. The average height of colonizing butterflybush increased from 3.5 feet to 8.5 feet between the 2012 Year 1 and 2013 Year 2 monitoring, and the average height of Scot's broom increased from 1.6 feet to 5.5 feet. Removal of these non-native species should be performed to increase the productivity of native plant species in the restoration area. In the Wetland M buffer area, colonizing species included snowberry and Himalayan blackberry. Table 6 lists species composition and cover values for colonizing shrub and tree vegetation. Table 7 lists species composition and numbers of individual colonizing shrubs and trees by species. Average heights of colonizing trees and shrubs are provided in Table 8.

Table 6

Species Composition and Percentage of Areal Cover of Colonizing Tree and Shrub Vegetation

Species	Year 1 (2012)	Year 2 (2013)
Wetland I Buffer Area		
Colonizing Trees		
Alnus rubra	5%	5%
Fraxinus latifolia	0%	1%
Salix lasiandra	5%	5%
Colonizing Shrubs		
Buddleia davidii	5%	5%
Cytisus scoparius	1%	1%
Rubus armeniacus	5%	5%
Rubus laciniatus	1%	1%
Wetland M Buffer Area		
Colonizing Shrubs		
Rubus armeniacus	5%	5%
Symphoricarpos albus	15%	30%

Table 7

Species Composition and Numbers of Colonizing Tree and Shrub Vegetation

Species	Year 0 (2011)	Year 1 (2012)	Year 2 (2013)	Variation from Year 0 to Year 2
Wetland I Buffer Area				
Colonizing Trees				
Alnus rubra	0	52	38	38
Fraxinus latifolia	0	0	9	9
Salix lasiandra	0	46	23	23
Total Colonizing Trees	**0**	**98**	**70**	**70**
Colonizing Shrubs				
Buddleia davidii	0	3	4	4
Cytisus scoparius	0	5	3	3
Rubus armeniacus[1]	NA	NA	NA	NA
Rubus laciniatus[1]	NA	NA	NA	NA
Total Colonizing Shrubs	**0**	**8**	**7**	**7**
Wetland M Buffer Area				
Colonizing Shrubs				
Rubus armeniacus[1]	NA	NA	NA	NA
Symphoricarpos albus	0	6	7	7
Total Colonizing Shrubs	**0**	**6**	**7**	**7**

Note: 1 Species not applicable for counting number of individuals

Table 8
Average Height of Colonizing Trees and Shrubs

Species	Year 1 (2012) Height (feet)	Year 2 (2013) Height (feet)
Wetland I Buffer Area		
Colonizing Trees		
Alnus rubra	1.4	2.8
Fraxinus latifolia	0	0.7
Salix lasiandra	0.9	1.5
Colonizing Shrubs		
Buddleia davidii	3.5	8.5
Cytisus scoparius	1.6	5.5
Rubus armeniacus[1]	NA	NA
Rubus laciniatus[1]	NA	NA
Wetland M Buffer Area		
Colonizing Shrubs		
Rubus armeniacus[1]	NA	NA
Symphoricarpos albus	2.9	3.4

Note: 1 Species not applicable for averaging heights

A variety of grass and herbaceous species was observed at the site. Within the Wetland I buffer area, the native species fireweed (*Epilobium angustifolium*) was the most dominant groundcover vegetation, providing approximately 40 percent areal cover, a decrease from the approximately 70 percent cover observed during the Year 1 monitoring. In addition to fireweed, the species prickly lettuce (*Lactuca serriola*) and cleavers bedstraw (*Galium aparine*) were also very dense at the site, providing 15 percent and 10 percent cover, respectively. Prickly lettuce is a non-native plant. These two species showed an increase in areal cover since the Year 1 monitoring was performed. These three plants may be concealing planted sword ferns, influencing the number of sword ferns observed (Table 4). Additional frequently observed grass and herbaceous species included Canada thistle (*Cirsium arvense*), colonial bentgrass (*Agrostis capillaris*), meadow fescue (*Festuca pratensis*), common velvetgrass (*Holcus lanatus*), common tansy (*Tanacetum vulgare*), and common dandelion (*Taraxacum officinale*). The Wetland M buffer area was dominated by bare ground, and field horsetail (*Equisetum arvense*) was the only herbaceous plant observed. A complete list of colonizing species observed at the site, and the percent areal cover within the buffer restoration areas, is presented in Table 9.

Table 9
Colonizing Plant Species and Percent Areal Cover

Scientific Name	Common Name	Year 1 (2012)	Year 2 (2013)
Wetland I Buffer Area			
Agrostis capillaris	Colonial bentgrass	5%	5%
Buddleia davidii	Butterflybush	5%	5%
Carex obnupta	Slough sedge	1%	1%
Cirsium arvense	Canada thistle	1%	10%
Cytisus scoparius	Scot's broom	1%	1%
Epilobium angustifolium	Fireweed	70%	40%
Equisetum arvense	Field horsetail	1%	1%
Festuca pratensis	Meadow fescue	5%	5%
Fraxinus latifolia	Oregon ash	0%	1%
Galium aparine	Cleavers bedstraw	0%	10%
Holcus lanatus	Common velvetgrass	1%	1%
Juncus effusus	Soft rush	5%	5%
Lactuca serriola	Prickly lettuce	10%	15%
Lotus corniculatus	Birds-foot trefoil	5%	5%
Phalaris arundinacea	Reed canarygrass	0%	1%
Poa pratensis	Kentucky bluegrass	1%	1%
Rubus armeniacus	Himalayan blackberry	5%	10%
Rubus laciniatus	Evergreen blackberry	1%	1%
Salix lasiandra	Pacific willow	5%	5%
Tanacetum vulgare	Common tansy	5%	5%
Taraxacum officinale	Common dandelion	5%	5%
Trifolium pratense	Red clover	1%	1%
Trifolium repens	White clover	1%	1%
Wetland M Buffer Area			
Equisetum arvense	Field horsetail	10%	5%
Rubus armeniacus	Himalayan blackberry	5%	5%

5.1.3 Summary

Total native tree, shrub, and groundcover areal cover was estimated for the Wetlands I and M buffer areas (Table 10). Table 10 includes planted species and native colonizing tree, shrub, and groundcover species.

Table 10

Total Overall Native Tree, Shrub, and Groundcover Areal Cover

Canopy	Year 1 (2012)	Year 2 (2013)
Wetland I Buffer Area		
Trees	25%	25%
Shrubs	30%	35%
Groundcover	80%	85%
Wetland M Buffer Area		
Trees	0%	0%
Shrubs	35%	55%
Groundcover	10%	5%

As described previously, no plant mortality was observed within the Wetland M buffer area, and several native colonizing shrubs were identified in this area. In the Wetland I buffer area, while existing vegetation appears to be in good health, some reduction in tree, shrub, and groundcover species occurred between the 2012 Year 1 and the 2013 Year 2 monitoring. However, the reduction in planted species was significantly fewer than what was documented between the 2011 as-built report and the 2012 Year 1 monitoring. For the planted tree species, two deceased tree species, one red alder and one Douglas fir, was observed during the site visit. For the planted shrub species, ten fewer species, five Nootka rose and five salmonberry, were observed during the site visit. Similar to the 2012 Year 1 monitoring results, the existing shrubs did not appear to be stressed or dying, and few dead individual shrubs and groundcover plants were observed. The lack of dead shrub species to account for the missing plants was unusual because, typically, the main stems of deceased shrubs are present for one or two years after planting. Based on observations during the 2012 Year 1 and 2013 Year 2 monitoring, the following factors likely contributed to the plant mortality observed within the Wetland I buffer area.

A lack of irrigation at the restoration area may have contributed to some of the plant mortality, but does not appear to be the most significant factor accounting for shrub mortality based on the lack of dead plants observed and the general good health of existing shrub vegetation. If a lack of irrigation had caused a large reduction in plants, there typically would be visible evidence of stressed or dying plants among the remaining vegetation, but as noted previously, existing shrubs appear to be in good health. Lack of irrigation and

exposure to sun is the more likely cause of tree mortality. Planted trees closer to the existing vegetation canopy associated with Wetland I to the east were generally in better health and had more survivors than the trees planted to the west that had less shade and more sun exposure. Full sun exposure and lack of irrigation is a common cause of tree mortality at restoration sites.

As discussed in the Year 1 report, deer browsing of vegetation appears to have played a significant role in the reduction of planted shrubs at the Wetland I buffer area since the 2011 planting of the restoration area occurred. While evidence of browsing was observed for some of the existing shrubs (and colonizing tree saplings) during the 2013 Year 2 monitoring effort, these plants appeared to be stunted in growth but not dying as a result of the browsing. During the 2013 Year 2 monitoring, the number of shrubs and trees that exhibited evidence of browsing was significantly less than the number that had exhibited signs of browsing during the 2012 Year 1 monitoring effort. It is possible that 2 years after planting, many of the existing shrubs are established enough to survive some browsing compared to when deer browsing occurred on the planted vegetation in 2011 shortly after the planting occurred because the young, recently transplanted plants were more vulnerable at that point to the impacts of browsing. This would also account for the reduction in colonizing tree saplings observed between the Year 1 and Year 2 monitoring, if the sapling vegetation was heavily browsed in the first season of growth.

A final possible factor in the reduction of planted shrubs and groundcover within the Wetland I buffer area is the dense and relatively tall presence of herbaceous groundcover. Fireweed provided approximately 70 percent areal cover of the Wetland I buffer area during the 2012 Year 1 monitoring and about 40 percent during the 2013 Year 2 monitoring. The fireweed cover typically ranged from 18 inches to 2 feet tall within the site. During the 2013 Year 2 monitoring, the herbaceous species prickly lettuce and cleavers bedstraw were also very dense at the site, providing approximately 15 percent and 10 percent cover, respectively. This groundcover is dense enough to potentially out-compete young shrub plantings, particularly shrubs that have been browsed by deer. In addition, if the dead shrubs were less than 2 feet tall, the herbaceous groundcover could also be concealing the dead shrubs. Only 26 of the 147 planted sword fern (17 percent) were documented during the 2012 Year 1 monitoring. During the 2013 Year 2 monitoring, 17 sword ferns were

observed, representing a total decrease of 130 sword ferns (88 percent). Most of the observed sword fern plants were growing within the dense herbaceous groundcover vegetation, and none of the sword fern plants extended above the herbaceous plants. While there may be several sword ferns present beneath the herbaceous groundcover, it is unlikely that a significant number is growing in the full shade of the herbaceous plants. Conditions at the site indicate that the dense groundcover is responsible for the low number of observed sword ferns at the site and may be contributing to sword fern mortality. While grass and herbaceous vegetation provide short-term erosion control measures at restoration sites, it appears that the dense groundcover vegetation may be contributing to the low success rate of planted material. Prickly lettuce is a non-native plant. However, fireweed and cleavers bedstraw are native species, and per the performance goals and standards of success, colonizing native plants are a benefit to the restoration effort, and they are accounted for in evaluating the success of the restoration.

As described in Section 4.2 on performance standards, standards of success, and contingency plans, success of the wetland buffer enhancement/restoration area will be based on an 80 percent survival rate of planted and colonizing native trees and shrubs after 3 years. Contingency measures for less than 80 percent plant survival and to achieve performance standards include: evaluating the reasons for mortality; making substitutions in plant type, species, quantity, and/or location; additional plant installation to address survival; weeding and additional plant installation to address invasive weed cover; and providing fencing or plant guards around plants to prevent animal damage. Based on the numbers of planted vegetation observed during the 2013 Year 2 monitoring, current plant survival under existing conditions is below the restoration performance goals and standards for shrub species. Due to colonizing native red alder, Oregon ash, and willow species, the tree canopy layer is meeting restoration performance goals and standards.

During the 2013 Year 2 monitoring, the non-native invasive shrub species Himalayan blackberry and Scot's broom were observed within the restoration area. Within the Wetland I buffer area, areal cover of Himalayan blackberry was 10 percent and Scot's broom was 1 percent. The non-native shrub species butterflybush also occupies 5 percent areal cover of the Wetland I restoration area. The non-native herbaceous species Canada thistle, prickly lettuce, and reed canarygrass (*Phalaris arundinacea*) provide 10 percent, 15 percent, and 1

percent areal cover, respectively. Within the Wetland M buffer area, areal cover of Himalayan blackberry was 5 percent. Blackberry bushes are growing along the roads on the north and west sides of the restoration site and are providing a seed source for colonizing blackberry shrubs within the site.

5.2 Wildlife

Wildlife data are collected during the annual monitoring. Five bird species commonly associated with urban areas in western Washington were observed during the 2013 Year 2 monitoring. Scat for two mammal species, coyote (*Canis latrans*) and black-tailed deer (*Odocoileus hemionus columbianus*), was observed in several locations of the site during both the 2012 Year 1 and 2013 Year 2 monitoring events. During the 2012 Year 2 monitoring, the amphibian species Pacific chorus frog (*Pseudacris regilla*) and the reptile species western garter snake (*Thamnophis elegans*) were also observed. As described previously, evidence of deer browsing of vegetation was also observed. A list of all wildlife species observed at the restoration site during the Year 1 and Year 2 monitoring periods is presented in Table 11.

Table 11
List of Wildlife Species Observed at the Restoration Site

Common Name	Scientific Name	August 2012	August 2013
Birds			
American crow	*Corvus brachyrhynchos*	x	x
American robin	*Turdus migratorius*	x	x
Black-capped chickadee	*Parus atricapillus*	x	x
Dark-eyed junco	*Junco hyemalis*	x	x
Song sparrow	*Melospiza melodia*		x
Mammals			
Coyote	*Canis latrans*	x	x
Black-tailed deer	*Odocoileus hemionus columbianus*	x	x
Amphibians			
Pacific chorus frog	*Pseudacris regilla*		x
Reptiles			
Western garter snake	*Thamnophis elegans*		x

5.3 Human Intrusion/Vandalism

Evidence of human intrusion included litter, aluminum cans, plastic bags, and two fire pits located at the south end of the site near Wetland M. No evidence of human intrusion or vandalism was observed in the area of Wetland I.

6 CONCLUSIONS AND RECOMMENDATIONS

The general findings of the 2013 Year 2 monitoring identify a reduction in the number of vegetation plantings in the Wetland I buffer area since the 2012 Year 1 monitoring report was completed. While some reduction in planted vegetation was observed during the 2013 monitoring, the reduction was not as great as what was documented between the 2011 monitoring and the 2012 monitoring effort. The Wetland M buffer area vegetation is in good health with an increase in native plant numbers due to colonization. The following is a summary of the performance goal status based on the Year 2 monitoring results. The Year 2 conditions of the site compared to the Year 2 and Year 3 performance standards (Section 4.2) are presented in Table 12.

- Wetland I buffer area survival rate of planted tree vegetation is 57 percent, below the performance standard of 80 percent survival rate of planted and colonizing native trees and shrubs after 3 years.
- Wetland I buffer area has colonizing native trees. Colonizing native trees and shrubs can be applied to the plant survival rate.
- Wetland I buffer area shrub plant survival rate is 45 percent, below the performance standard of 80 percent survival rate of planted and colonizing native trees and shrubs after 3 years.
- Wetland I buffer area groundcover plants have shown a decrease since 2011. Performance standards do not include survival goals for groundcover vegetation.
- The Wetland I and M buffer areas currently meet the areal cover performance standard of 50 percent cover of native trees, shrubs, and groundcover species after 2 years.
- The Wetland I buffer area currently does not meet the performance standard of less than 20 percent cover of invasive species.
- The Wetland M buffer area currently meets the performance standard of less than 20 percent cover of invasive species.

Table 12

Summary of Current Site Conditions Compared to Year 2 and Year 3 Performance Standards

Performance Standard	Performance Standard Percentage	Year 2 (2013) Conditions
Wetland I Buffer		
Percent Cover of Native Trees after 2 Years	50%[1]	25%
Percent Cover of Native Shrubs after 2 Years	50%[1]	35%
Percent Cover of Native Groundcover after 2 Years	50%[1]	85%
Percent Survival of Planted and Colonizing Native Trees after 3 Years	80%	>100%[2]
Percent Survival of Planted and Colonizing Native Shrubs after 3 Years	80%	45%
Cover of Invasive Species	<20%	25%
Wetland M Buffer Area[2]		
Percent Cover of Native Shrubs after 2 Years	50%	55%
Percent Survival of Planted and Colonizing Native Shrubs after 3 Years	80%	>100%[3]
Cover of Invasive Species	<20%	5%

Notes:
1 Percent cover performance standard for native tree, shrub, and groundcover species is cumulative total of the 3 cover types
2 Greater than 100% due to colonizing native species
3 Only shrubs were planted in Wetland M Buffer Area

Numerous native and some non-native grass and herbaceous species have become established and have contributed to the groundcover present. While the density of grass and herbaceous cover in the Wetland I buffer area is currently competing with, and may be restricting the growth of, planted shrubs and sword ferns, native species are the dominant herbaceous groundcover at the site, and colonizing native species are considered a benefit to the restoration effort.

Maintenance of the site should include removal of invasive species to meet the performance standard for invasive species and to prevent their continued growth and establishment in the restoration area.

The overall condition of the planted vegetation at the site ranges from good to poor. Many of the native plant species in the restoration areas are developing and are beginning to provide wildlife foraging, shelter, and resting habitat for terrestrial wildlife species. Based on

the observations made during the Year 2 Monitoring event, due to the rate of shrub plant mortality at the site, additional shrub plantings are needed to meet the restoration site goals and performance standards. Additional planting of tree species is not currently necessary because native trees species are colonizing the site at a rate to meet performance goals. Supplemental planting in Wetland I was scheduled for fall 2013. Additional measures such as irrigation, mulching, soil amendments, maintenance of non-native vegetation around the planted vegetation, and/or fencing appear to be necessary for the planted shrub species in the Wetland I buffer area to survive at the restoration site.

7 REFERENCES

Anchor QEA LLC (Anchor QEA). 2010a. *Wetland Buffer Enhancement/Restoration Plan Kent Slag Site Excavation Project*. Prepared for Farallon Consulting L.L.C, Seattle, Washington.

Anchor QEA, 2010b. *Wetland Buffer Planting Plan Kent Slag Site Excavation Project*. Prepared for Farallon Consulting L.L.C, Seattle, Washington.

Anchor QEA, 2010c. *Wetland Buffer Enhancement/Restoration Plan Addendum Kent Slag Site Excavation Project*. Prepared for Farallon Consulting L.L.C, Seattle, Washington.

Anchor QEA, 2011a. *Wetland Buffer Enhancement/Restoration As-Built Report.* Prepared for Farallon Consulting L.L.C, Seattle, Washington.

Anchor QEA, 2011b. *Inspection of Delivered Plants and Planting Procedures Field Report.* Prepared for Farallon Consulting L.L.C, Seattle, Washington.

Anchor QEA, 2011c. *Inspection of Planting Areas Field Report.* Prepared for Farallon Consulting L.L.C, Seattle, Washington.

Anchor QEA, 2012. *Wetland Buffer Enhancement/Restoration Year 1 Monitoring Report.* Prepared for Farallon Consulting L.L.C, Seattle, Washington.

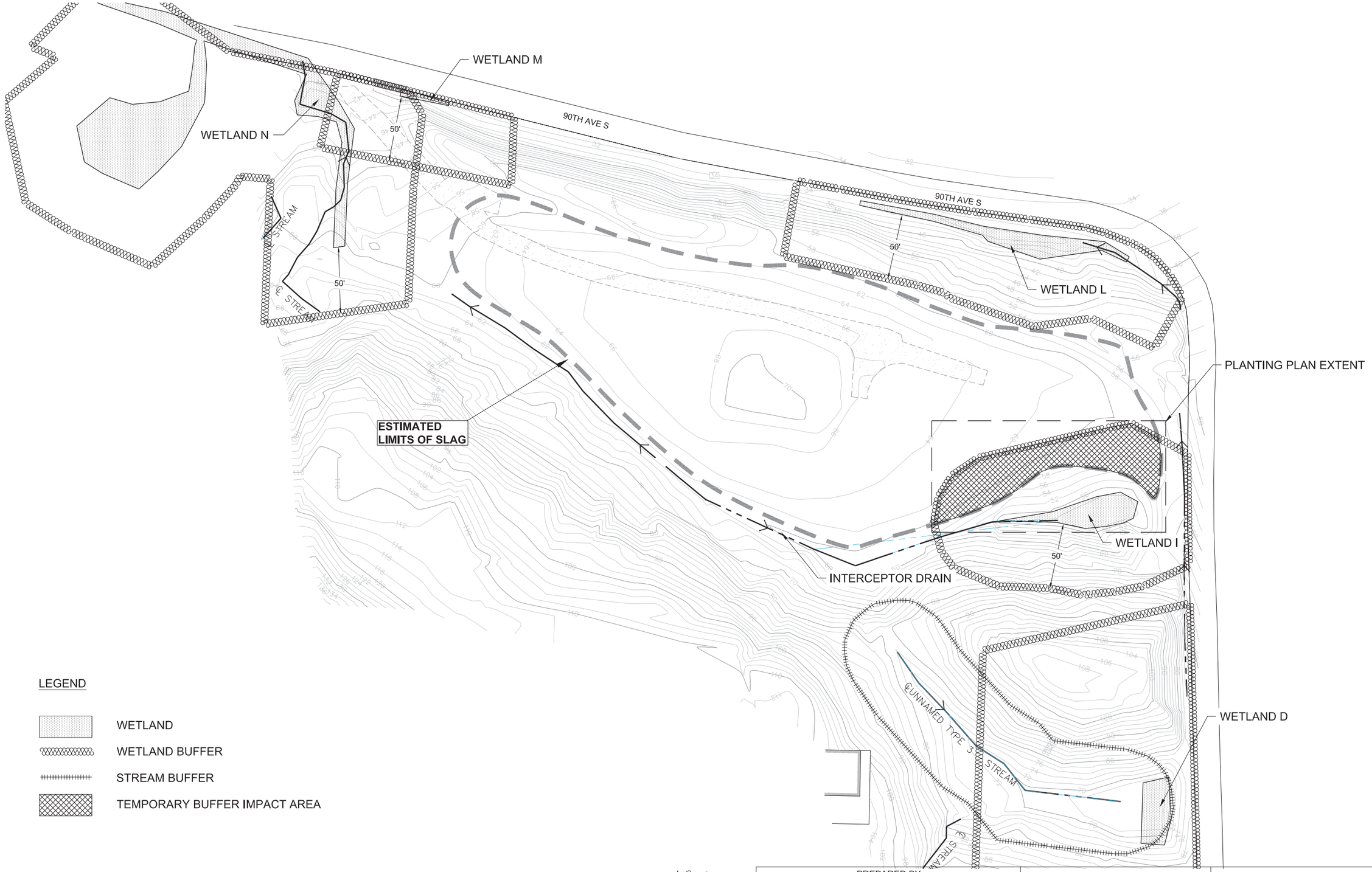
ESA Adolfson, 2006. *South 224th Street Extension Wetland Technical Report*. Prepared for City of Kent, Washington.

Farallon Consulting, 2010a. *Kent Slag Site Excavation Project Design Plans*. Prepared for Earle M. Jorgensen Company, Lynwood, California.

Farallon Consulting, 2010b. *Cleanup Action Work Plan*. Prepared for Earle M. Jorgensen Company, Lynwood, California.

Springwood Associates, Inc., 1995. *Beckwith Property Slag Disposal Site Wetland Delineation Report*. Prepared for SECOR International, Inc. Bellevue, Washington.

APPENDIX A
WETLAND BUFFER ENHANCEMENT/ RESTORATION DRAWINGS



LEGEND

- WETLAND
- WETLAND BUFFER
- STREAM BUFFER
- TEMPORARY BUFFER IMPACT AREA

	6/15/10	ISSUED FOR CONSTRUCTION	BMB	PH	6/22/10
	DATE	DESCRIPTION	BY	CKD.	APP.

0 70
Scale in feet
CONTOUR INTERVAL: 2 FOOT

PREPARED BY
FARALLON CONSULTING
ANCHOR QEA

PREPARED FOR
EARLE M. JORGENSEN COMPANY
10650 ALAMEDA STREET
LYNWOOD, CALIFORNIA 90262

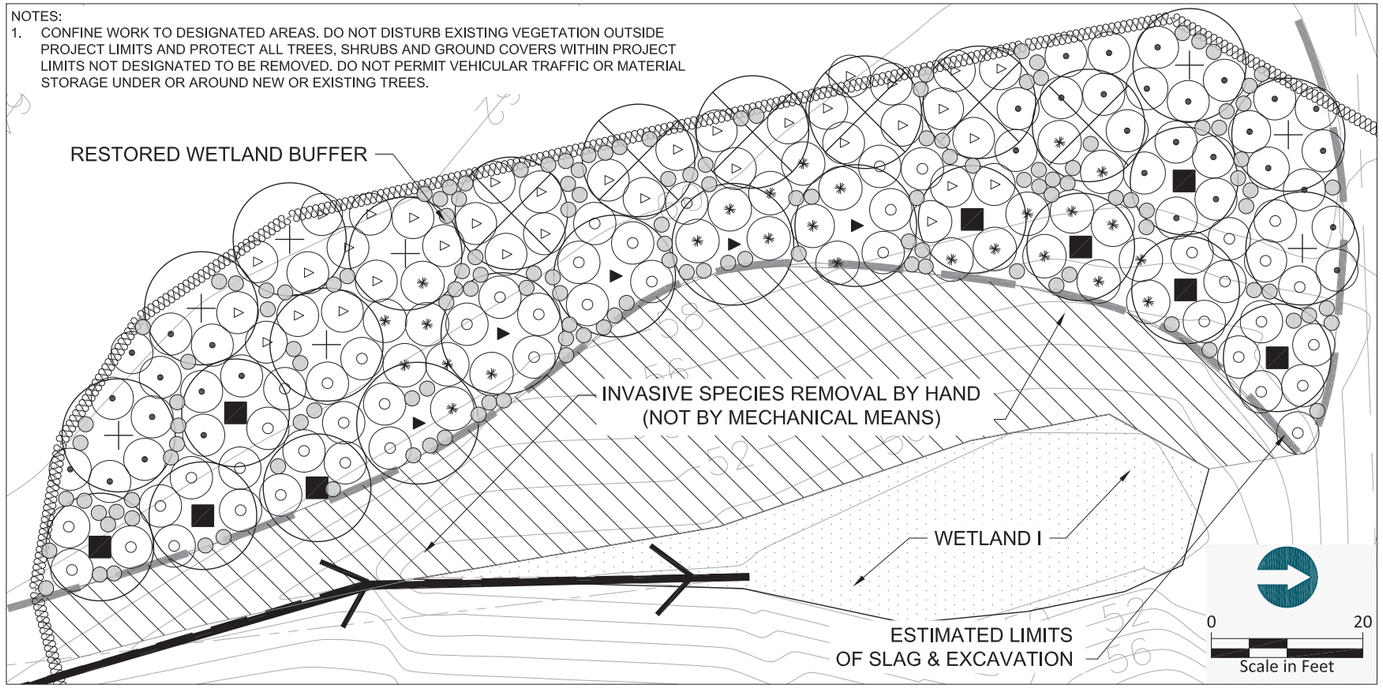
SLAG DISPOSAL BECKWITH PROPERTY SITE
KENT, WASHINGTON

WETLAND BUFFER PLAN

STATE OF WASHINGTON
REGISTERED
LANDSCAPE ARCHITECT
PETER C. HUMMEL
CERTIFICATE NO. 422

SCALE AS SHOWN
PROJECT NO. 831-022
FILE NAME: 100224-PL-001.dwg
SHEET NO. W1 OF 3

NOTES:
1. CONFINE WORK TO DESIGNATED AREAS. DO NOT DISTURB EXISTING VEGETATION OUTSIDE PROJECT LIMITS AND PROTECT ALL TREES, SHRUBS AND GROUND COVERS WITHIN PROJECT LIMITS NOT DESIGNATED TO BE REMOVED. DO NOT PERMIT VEHICULAR TRAFFIC OR MATERIAL STORAGE UNDER OR AROUND NEW OR EXISTING TREES.



PLANTING PLAN

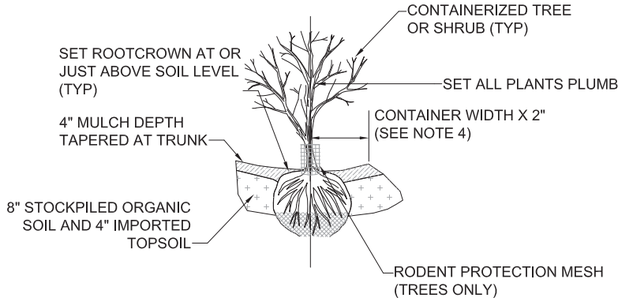
PLANTING SEQUENCE / NOTES:

1. STRIP ORGANIC SOIL AND STOCKPILE SEPARATELY FROM SLAG AND OVERBURDEN.
2. RIP, DISC, OR SCARIFY SUBGRADE SOILS TO A MINIMUM DEPTH OF 12 INCHES. DO NOT SCARIFY WITHIN DRIP LINE OF EXISTING TREES TO BE RETAINED.
3. PLACE 8" OF STOCKPILED SOILS AND 4" OF IMPORTED TOPSOIL WTIHIN WETLAND BUFFER PLANTING AREA.
4. DIG PLANTING PIT THAT IS AT LEAST TWICE THE DIAMETER OF CONTAINER. REMOVE ALL ROCKS, ROOTS, STICKS AND OTHER DEBRIS LARGER THAN 1" DIAMETER. SCARIFY THE PLANTING PIT BOTTOM AND SIDES TO A DEPTH OF 4 INCHES.
5. SET PLANT MATERIAL IN THE PLANTING PIT TO PROPER GRADE AND ALIGNMENT. SET PLANTS UPRIGHT, PLUMB, AND FACED TO GIVE THE BEST APPEARANCE OR RELATIONSHIP TO EACH OTHER. SET CROWN OF PLANT MATERIAL AT THE FINISH GRADE. NO FILLING WILL BE PERMITTED AROUND TRUNKS OR STEMS. BACKFILL THE PLANTING PIT WITH SOIL, DO NOT USE MUDDY MIXTURES FOR BACKFILLING.
6. SPACE PLANTS USING TRIANGULAR SPACING IN ACCORDANCE WITH PLANT SCHEDULE DIMENSIONS. PLANT GROUND COVERS TO WITHIN 18" OF THE TRUNKS OF TREES AND SHRUBS WITHIN PLANTING AREA AND TO WITHIN 12" OF THE EDGE OF PLANTING AREA. PLANT SHRUBS WITHIN 5' OF THE TRUNKS OF TREES WITHIN PLANTING AREA AND TO WITHIN 3' OF THE EDGE OF PLANTING AREA.
7. SHAPE SOIL TO PROVIDE WATERING RING WITH A DIAMETER EQUAL TO 2X THE CONTAINER WIDTH.
8. MULCH PLANTING BEDS IMMEDIATELY AFTER PLANTING. THOROUGHLY WATER MULCHED AREA. AFTER WATERING, RAKE MULCH TO PROVIDE A UNIFORM FINISHED SURFACE.

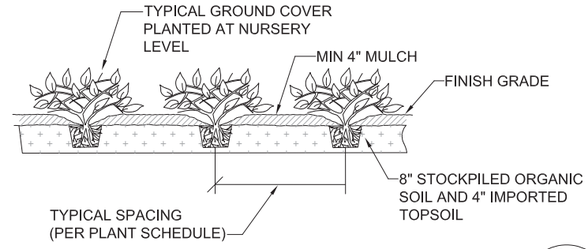
PLANTING SCHEDULE / LEGEND

Common Name	Scientific Name	Size	Spacing	Quantity
TREES				
Red Alder	*Alnus rubra*	5 gal.	15' O.C.	9
Big leaf Maple	*Acer macrophyllum*	5 gal.	15' O.C.	6
Douglas Fir	*Pseudotsuga menziesii*	5 gal.	15' O.C.	8
Western Red Cedar	*Thuja plicata*	5 gal.	15' O.C.	5
SHRUBS				
Indian Plum	*Oemleria cerasiformis*	1 gal.	6' O.C.	36
Salmonberry	*Rubus spectabilis*	1 gal.	6' O.C.	45
Nootka Rose	*Rosa nutkana*	1 gal.	6' O.C.	28
Snowberry	*Symphoricarpos albus*	1 gal.	6' O.C.	35
GROUNDCOVER				
Western Sword Fern	*Polystichum munitum*	1 gal.	As Shown	147

EXISTING WETLAND PREVIOUSLY RESTORED WITH NATIVE PLANTS



1 - TYPICAL TREE AND SHRUB PLANTING DETAIL
SCALE:NTS



2 - GROUNDCOVER PLANTING
SCALE:NTS

STATE OF WASHINGTON
REGISTERED
LANDSCAPE ARCHITECT
PETER C. HUMMEL
CERTIFICATE NO. 422

	6/15/10	ISSUED FOR CONSTRUCTION	BMB	PH	6/22/10
	DATE	DESCRIPTION	BY	CKD.	APP.

CONTOUR INTERVAL: 2 FOOT

PREPARED BY
FARALLON CONSULTING
ANCHOR QEA

PREPARED FOR
EARLE M. JORGENSEN COMPANY
10650 ALAMEDA STREET
LYNWOOD, CALIFORNIA 90262

SLAG DISPOSAL BECKWITH PROPERTY SITE
KENT, WASHINGTON

PLANTING PLAN

SCALE AS SHOWN
PROJECT NO. 831-022
FILE NAME: 100224-PL-002.dwg
SHEET NO. W2 OF 3

PLANTING SPECIFICATIONS

Submittals:

1. Topsoil analysis results of a 5 pound bag from soils testing laboratory, indicate source and obtain Owner's approval before hauling topsoil to site.
2. Source of the mulch supply and a 1 gallon sample for approval before installation.
3. List of nurseries supplying all plant species with Name and phone number of contact person. Submit representative color, dated photographs of each plant species.

Notifications:

Notify the Owner at least five working days prior to the installation of plant material.

Products:

Topsoil:

The Topsoil shall consist of 60 percent Sand Component and 40 percent Composted Organic Amendment by volume and shall meet or exceed the following specifications:

The Sand Component shall meet the following specifications within reasonable variations:

Screen Size	Percent Passing
6.35 mm	95
#10	85
#30	50
#60	40
#100	20
#200	10

The Composted Organic Soil Amendment shall consist of 100 percent decomposed organic mulch material, and shall consist of yard waste debris or other organic waste materials that have been sorted, ground up, aerated, and aged, and shall be fully composted, stable, and mature (non-aerobic). The composting process shall be for at least 6 months' time and the organic amendment shall have a uniform dark, soil-like appearance and consist of 100 percent recycled content. In addition, the organic amendment shall have the following physical characteristics:

1. Shall be certified by the Process to Further Reduce Pathogens (PFRP) guideline for hot composting as established by EPA. Shall be fully mature and stable before usage.
2. Shall be screened using a sieve no finer than 1/4-inch and no greater than 1/2-inch. Based on dry weight of total organic amendment sample, it must comply with the following percent by weight passing:

Sieve Size	Maximum %	Minimum %
12.7 mm (1/2 inch)	0	100
6.35 mm (1/4 inch)	100	95
4.76 mm	100	90
2.38 mm	100	75
1.00 mm	45	70
500 micron	30	0

3. Meets "composted materials" definition in WAC 173-350 Section 220, available at: http://www.ecy.wa.gov/programs/swfa/compost/
4. Has Organic Matter Content 35 to 65 percent and Carbon to Nitrogen ratio of 25:1.
5. Shall have heavy metal concentrations below the Washington State Department of Agriculture (WSDA) per year load limits as follows:

Metal	WSDA-Maxium pounds per acre per year
Arsenic	0.297
Cadmium	0.079
Cobalt	0.594
Lead	1.981
Mercury	0.019
Molybdenum	0.079
Nickel	0.713
Selenium	0.055
Zinc	7.329

6. Shall be certified by PFRP guidelines for composting as established by the U.S. Environmental Protection Agency (EPA).

PLANTING SPECIFICATIONS CONTINUED

The topsoil mix shall also have the following characteristics:

1. The pH range shall be from 5.5 to 7.5.
2. The Sodium Adsorption Ratio shall be less than 6.0.
3. The Saturation Extract Concentration of Boron shall be less than 1.0 part per million (ppm).
4. The Water Percolation/Infiltration Rate of the disturbed soil sample shall be a minimum of 0.4 inches per hour.
5. The Soil Structure shall be loose, friable, and not subject to consolidation or compaction.
6. The soil mix shall contain less than 100 plant parasitic nematodes per 100 cubic centimeters (cc) of soil.
7. The soil mix shall be relatively free of soil-borne plant pathogens.
8. Minimal weed seed shall be present, based on germination testing of a representative sample.
9. Non-soil components shall be less than 1 percent by volume (i.e., plastic, sticks, glass, etc.).
10. The Final Topsoil Mix shall contain sufficient quantities of available nitrogen, phosphorus, potassium, calcium, magnesium, sulfate, copper, zinc, manganese, iron, and boron to support normal plant growth. In the event of nutrient inadequacies, provisions shall be made to add required materials prior to planting.

Mulch:

Bark or wood chip mulch shall be derived from Douglas fir, pine, or hemlock species. It shall be ground so that a minimum of 95% of the material will pass through a 2-inch sieve and no more than 25%, by loose volume, will pass through a No. 4 sieve. The mulch shall not contain resin, tannin, or other compounds in quantities that would be detrimental to plant life. Arborist woodchips, sawdust or wood shavings shall not be used as mulch.

Plants:

Comply with sizing and grading standards of th latest edition of "American Standards for Nursery Stock."

Protect existing native vegetation from damage caused by landscaping operations.

All plants shall by nursery grown and from a nursery with similar climatic conditions to the locality of the project. Stock furnished shall be at least the minimum size indicated.

Provide only sound, healthy, vigorous plants free from weeds, defects, sunscald injuries, and abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation. All plants shall have a fully developed form without voids, open spaces, broken branches, bruised bark, flush cuts or stubs. No plants shall be loose in the container or pot bound.

Plants shall be packed, transported and handled with care. Cover plants transported on open vehicles with a protective covering to prevent wind burn. No plant material will be bound with rope or wire in a manner that would damage or break the branches. If plants cannot be planted immediately upon delivery, properly protect them with soil, wet peat moss, or in a manner acceptable to the Owner. Water heeled in plantings daily. Do not handle plants by trunks, stems or tops.

Plant material shall be inspected and approved by the Consultant and the Owner on site prior to installation. Remove unsatisfactory material from the site immediately.

Planting vegetation shall be performed during the period between October 1 and April 1.

Stock shall not be installed when ambient temperatures are below 35 degrees F or above 80 degrees, or when wind velocity exceeds 30 miles per hour.

Warrant plant material to remain alive and be in healthy, vigorous condition for a period of one year after the date of Physical Completion.

Rodent Protection Mesh:

Encircle woody trunks of planted trees with thin plastic mesh to protect against cambian damage by rodents. Extend mesh cylinder 3" below and 12" above the finished grade line. Assure that the guage of protective wrap is such that tree growth will split the material if it is not physically removed.

Maintenance:

Maintain planting until acceptance by Owner. Maintenance shall include cultivating, weeding, watering, pruning (only as directed), and application of appropriate insecticides and fungicides necessary to maintain plants free of insects and disease.

Reset settled plants to proper grade and position. Restore planting watering ring and adjacent material and remove dead material.

Water trees, shrub, and ground cover beds within the first 24 hours of initial planting, and not less than twice per week (including rain) until Physical Completion.

Physical Completion:

Inspection to determine Physical Completion of planted areas will be made by the Owner, upon the Contractor's request. Provide notification at least 10 working days before requested inspection date.

Planted areas will be accepted provided all requirements, including the maintenance period have been complied with and plant materials are alive and in a healthy vigorous condition.

Upon Physical Completion, the Owner will assume plant maintenance.

STATE OF WASHINGTON
REGISTERED
LANDSCAPE ARCHITECT
PETER C. HUMMEL
CERTIFICATE NO. 422

	6/15/10	ISSUED FOR CONSTRUCTION	BMB	PH	6/22/10
	DATE	DESCRIPTION	BY	CKD.	APP.

CONTOUR INTERVAL: 2 FOOT

PREPARED BY
FARALLON CONSULTING
ANCHOR QEA

PREPARED FOR
EARLE M. JORGENSEN COMPANY
10650 ALAMEDA STREET
LYNWOOD, CALIFORNIA 90262

SLAG DISPOSAL BECKWITH PROPERTY SITE
KENT, WASHINGTON

PLANTING SPECIFICATIONS

SCALE AS SHOWN
PROJECT NO. 831-022
FILE NAME: 100224-PL-002.dwg
SHEET NO. W3 OF 3

APPENDIX B
MONITORING SITE PHOTOGRAPHS

Photograph 1

Photo Point 1: Wetland I Buffer Facing North from West Side of Buffer

Photograph 2

Photo Point 2: Wetland I Buffer Facing South from West Side of Buffer

Photograph 3

Photo Point 3: Wetland I Buffer Facing South from Middle of Buffer

Photograph 4

Photo Point 4: Wetland M Buffer Facing North from East Side of Buffer