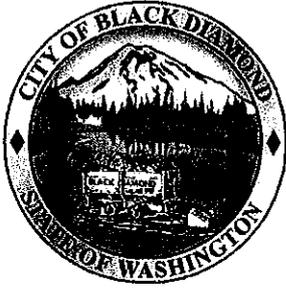


27.

Wetland Buffer Vegetation Management Plan

Wetland Resources, Inc.,

December 19, 2013, revised May 6, 2013



# REVISION/CORRECTION SUBMITTAL FORM

**Submittal Requirements:**

**All revisions / correction submittals MUST contain the following:**

1. A completed City of Black Diamond Revision/Correction submittal form
2. Two (2) sets of revised and/or corrected drawings/sheets (wet stamped by architect, if applicable).
3. Revised structural calculations, if applicable (must be stamped by engineer)
4. A written letter to the City that shows an itemized summary of your submittal (must include sheet and detail numbers)
5. All changes **MUST BE CLOUDED** or **HIGHLIGHTED** on each plan set

Date: 5/9/14

Permit #: PLN13-0027

Property Address: SEE THE PHASE 2 PLAT C PLAT DRAWINGS OR PROJECT NARRATIVE

Project Name: THE VILLAGES MPD PHASE 2 PLAT C PRELIMINARY PLAT

Contact Person: COLIN LUND

Phone: (425) 998-2100

Email: clund@parrishholdings.com

**TYPE OF SUBMITTAL:**

( ) **REVISION:** A change the applicant has made to a plan that is either:

1. An approved plan already issued by the City or
2. A project under current plan review

(X) **CORRECTION:** An applicant response to a correction letter written by the City to the applicant

Permit Issued? ( )Yes (X)No \*A plan check fee for revision is \$84 per hour with a minimum of \$42 for ½ hour

**Please describe revision/correction submittal:**

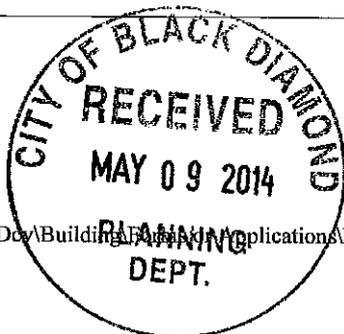
REVISED SENSITIVE AREA STUDY, BUFFER AGRICULTURE PLAN AND WILDLIFE ANALYSIS; REVISED WETLAND BUFFER VEGETATION MANAGEMENT PLAN; RESPONSES TO PERFECT COMMENTS FROM WRI AND GOLDER ASSOCIATES

**Sheets Affected:** \_\_\_\_\_ If more than two (2) sheets will be changed, please submit two (2) new full sets of plans. Revisions on issued permits only require submittal of the affected sheets.

**For City Use Only:**

REQ'D APPROVAL	CHECKED BY	ROUTE TO	DATE	INITIAL	COMMENTS	FEES
( )	1. BUILDING	_____	_____	_____	_____	_____
( )	2. PLANNING	_____	_____	_____	_____	_____
( )	3. FIRE	_____	_____	_____	_____	_____
( )	4. PW	_____	_____	_____	_____	_____
( )	5	_____	_____	_____	_____	_____

TOTAL \$





Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

9505 19th Avenue S.E.  
Suite 106  
Everett, Washington 98208  
(425) 337-3174  
Fax (425) 337-3045

## WETLAND BUFFER VEGETATION MANAGEMENT PLAN

FOR

### THE VILLAGES PHASE 2 PLAT C

*Wetland Resources, Inc.* Project #08035

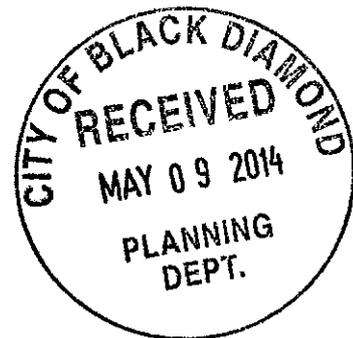
Prepared By:

Wetland Resources, Inc.  
9505 - 19th Ave SE, Suite 106  
Everett, WA 98208  
(425) 337-3174

For:

BD Village Partners, LP  
Attn: Colin Lund  
10220 NE Points Dr., Suite 310  
Kirkland, WA 98033

December 19, 2013  
Revision: May 6, 2014





## TABLE OF CONTENTS

<b>INTRODUCTION</b>	<b>1</b>
<b>SITE DESCRIPTION</b>	<b>2</b>
<b>EXISTING CONDITIONS</b>	<b>2</b>
<b>POST-DEVELOPMENT CONDITIONS</b>	<b>3</b>
<b>PROJECT MONITORING PROGRAM</b>	<b>3</b>
<b>PROJECT SUCCESS AND COMPLIANCE</b>	<b>4</b>
<b>MAINTENANCE</b>	<b>5</b>
<b>CONTINGENCY PLAN</b>	<b>6</b>
<b>PROJECT NOTES</b>	<b>6</b>
<b>PLANTING NOTES (IF PLANTING IS DEEMED NECESSARY)</b>	<b>7</b>
<b>USE OF THIS REPORT</b>	<b>10</b>
<b>WETLAND BUFFER VEGETATION MANAGEMENT PLAN MAP</b>	<b>SHEET 1/1</b>

**ATTACHMENT - OCTOBER 28, 2013, AMERICAN FOREST MANAGEMENT TREE INVENTORY**

**THE VILLAGES MPD PHASE 2 PLAT C  
WETLAND BUFFER VEGETATION MANAGEMENT PLAN**

**Introduction**

The purpose of this Wetland Buffer Vegetation Management Plan for The Villages MPD Phase 2 Plat C is to comply with the provisions set forth in BDMC 19.10.230(F). Given that the Applicant seeks preliminary plat approval at this time, the vegetation management plan area is defined as that portion of the buffer, which lies between the proposed development areas and the delineated wetland areas.

Taken from BDMC 19.10.230(F):

*Vegetation management. In order to maintain effective buffer conditions and functions, a vegetation management plan shall be required for all buffer areas, to include:*

- 1. Maintaining adequate cover of native vegetation including trees and understory; if existing tree cover is less than a relative density of twenty, planting shall be required consisting of a density of three hundred seedlings per acre or the equivalent;*
- 2. Provide a dense screen of native evergreen trees at the perimeter of the buffer. Clearing of existing second growth forest generally results in trees with little canopy at or near the ground level:
  - a. Core wetland and stream complex buffers generally will require interplanting among existing trees within an area of thirty to fifty feet to provide for regeneration of native species and prevent the establishment of invasive species.*
  - b. Other wetland buffers will require plantings if existing vegetation is not sufficient to prevent viewing adjacent development from within the buffer or penetration of light and glare into the buffer or to prevent establishment of invasive species.*
  - c. Planting specifications generally shall consist of as many rows of the following units as required to accomplish the management objectives:
    - (i) Two rows of three-foot high stock of native evergreens at a triangular spacing of fifteen feet, or*
    - (ii) Three rows of gallon containers at a triangular spacing of eight feet.***
- 3. Fencing may be required in order to separate sensitive areas from developed areas;*
- 4. Provide a plan for control of invasive weeds, and remove existing invasive species;*
- 5. Provide for a monitoring and maintenance plan for a period of at least five years, except this provision may be waived for single-family residential lots;*

*6. Vegetation management plans for all wetlands may provide for preservation of view corridors from existing single-family residences by the placement of new vegetation in a manner that frames views, provided that the same density is maintained and key functions such as shading for temperature attenuation and habitat functions are maintained.*

## **SITE DESCRIPTION**

The Villages MPD Phase 2 Plat C (Phase 2 Plat C) site is located approximately 1.3 miles west of the intersection of Roberts Drive and SR 169, south of Roberts Drive. The project site is located generally within the southeast quarter and portions of the southwest quarter of Section 15, Township 21 North, Range 6 East, and includes very limited areas of the northwest quarter of the northeast quarter of Section 22, Township 21 North, Range 6 East, all within the city limits of Black Diamond, Washington. The preliminary plat is situated on approximately 136 acres consisting of the following King County Tax Parcels: 152106-9108, 152106-9096 and 222106-9004. Topography undulates with alternating swaths of uplands and lowlands and generally trends toward an east aspect. There is a logging road system on this site that is used by unauthorized off-road vehicle (ORV) users, pedestrians and pets. No existing structures exist within the boundary of the Phase 2 Plat C site. Most of the site and surrounding land has consisted of managed forest plantations for decades, which was most recently logged in the late 70's to early 80's. Due to this forest management activity, the site is typically forested with an even-aged stand of Douglas fir and a low lying, native understory.

Six wetlands were identified within or partially within the boundary of, the proposed Phase 2 Plat C site: Wetlands E1, E7, E8, E10, TOS and 213. Wetland E1 is a Category II with a 110-foot buffer in its northern basin and a 225-foot buffer in its southern basin (as noted on the preliminary plat drawings). Wetlands E7, E8, and E10 are Category III wetlands with a 110-foot designated buffer (DOE, Black Diamond classifications). Wetland TOS is part of the Core Wetland Complex identified within BDMC §19.10.230 and is therefore a Category I wetland with a designated 225-foot protective buffer. Lastly, Wetland 213 is a Category IV wetland with a 40-foot designated buffer.

## **EXISTING CONDITIONS**

Forest areas within the boundary of Phase 2 Plat C are second or third generation commercial forestry plantings. As such, they are typically maintained at a minimum relative density of 20-foot spacing (or 109 trees per acre).

American Forest Management (AFM) performed the significant tree inventory for the Phase 2 Plat C project site (included as Appendix A of this WBVMP). The inventory was prepared on October 28, 2013 in conjunction with the Phase 2 Plat C application. This inventory was limited to the proposed development portion of the site (41.14 acres) rather than the entire Phase 2 Plat C property. The tree summary table, found on page 2 of the AFM report, shows that relative significant tree density is equal to 193 trees per acre. Trees planted on 20-foot centers yield 108.9 trees per acre. Therefore, existing relative density is approximately 15-foot centers without including black cottonwood and red alder. Therefore, no additional seedlings will initially be required. It is worth noting that gross density does not take into consideration the areas that are not forested (existing gravel roads and scrub-shrub wetlands).

It is important to note that the definition of “significant tree” adopted by the City of Black Diamond excludes all trees smaller than six-inch diameter at breast height (dbh), and all black cottonwood and red alder (regardless of dbh). From an ecological perspective, the functions and values provided by “non-significant trees” are consistent with functions and values provided by “significant trees.” Therefore, “non-significant trees” should contribute to the total density calculation within the project area. Black cottonwood and red alder are extremely common tree species found in the vicinity of the project area, and their total density represents a non-trivial addition to the significant tree data. If these “non-significant trees” were included in the overall inventory, the resulting density would be higher than the 15-foot spacing identified in the AFM report.

### **POST-DEVELOPMENT CONDITIONS**

Given the nature of the second and third growth forests and the proposed development activity within Phase 2 Plat C, it is likely that some windthrow will occur, reducing the relative net density of the stand to above the current 15-foot density. It is not anticipated however that windthrow would reduce the relative density to below the required 20-foot center density. Provided that in its post developed condition the Vegetation Management Area will meet the required relative 20-foot center density, no additional plantings are proposed at this time. Given the existing and post developed density of native vegetation within the Vegetation Management Area, the conditions established in BDMC 19.10.230(F) are met.

### **PROJECT MONITORING PROGRAM**

Requirements for monitoring on a wetland by wetland basis, when clearing is adjacent to a wetland buffer:

1. Initial compliance/as-built report of post development tree density in the wetland and adjacent buffer.
2. Annual site inspections, once per year in the fall, to document that the minimum tree density and weedy/invasive coverages are maintained the wetland and adjacent buffer for five years from the date of initial clearing activity adjacent to the buffer.
3. Annual monitoring reports in the fall of each monitored year documenting the tree density, invasive species density and general conditions of the wetland and buffer observed during the annual site visits.

**Purpose for Monitoring:** The purpose for monitoring this vegetation management area shall be to evaluate its success. Success will be determined if monitoring shows at the end of five years that the definitions of success stated below are being met. The property owner shall grant access to the wetland buffer areas for inspection and maintenance to the contracted landscape and/or wetland specialist and the MDRT during the monitoring period or until the project is evaluated as successful.

**Monitoring:** Monitoring shall occur on a wetland-by-wetland basis, when clearing occurs adjacent to a wetland buffer. Monitoring shall be conducted annually for five years in accordance with the

approved Wetland Buffer Vegetation Management Plan. The monitoring period will begin once the MDRT receives written notification from a Professional Wetland Scientist confirming clearing and grading has been completed adjacent to a given wetland and/or its buffer.

**Vegetation Monitoring:** Sampling points or transects will be established for vegetation monitoring and photo points will be established from which photos will be taken throughout the monitoring period. Permanent sampling points (transect lines) must be identified on the site plans in the first monitoring report (they may be drawn on approved plans by hand). Each sampling point shall detail herbaceous, shrub, and tree coverage in accordance with the King County guidance document titled *Critical Areas: Restoration & Enhancement in King County* (2012). Monitoring of vegetation sampling points shall occur annually between May 15 and September 30 (prior to leaf drop), unless otherwise specified.

**Photo points:** No less than three permanent photo points will be established within the wetland buffer areas. Photographs by the Applicant's wetland consultant will be taken from these points to visually record the condition of the vegetation management area. Photos shall be taken annually between May 15 and September 30 (prior to leaf drop), unless otherwise specified.

**Monitoring Report Contents:** Monitoring reports shall be submitted to the MDRT by the Applicant's wetland consultant by October 31 of each year during the monitoring period. As applicable, monitoring reports must include descriptions / data for:

1. Site plan and vicinity map
2. Baseline condition discussion, including a description of observed field conditions (discussion will specifically relate to minimum tree density and invasive weed presence)
3. Historic description of project, including date of completion of clearing and grading, current year of monitoring, restatement of goals and performance standards
4. Plant density and observed windthrow and explanation of monitoring methodology in the context of assessing performance standards
5. Slope condition, site stability, any structures or special features
6. Wetland and buffer conditions, e.g., surrounding land use, use by humans, and/or wild and domestic creatures
7. Observed wildlife, including amphibians, avians, and others
8. Assessment of nuisance / exotic biota and recommendations for management
9. Soils, including texture, Munsell color, rooting, and oxidized rhizospheres
10. Receipts for any structural repair or replacement
11. Color photographs taken from permanent photo-points that shall be depicted on the monitoring report map

## PROJECT SUCCESS AND COMPLIANCE

**Criteria for Success:** Upon completion of the clearing and grading activity, an inspection by a qualified biologist hired by the Applicant will be made to determine plan compliance. A compliance report (as-built letter) will be supplied to the MDRT within 30 days after the completion of the

clearing and grading activity. The letter will include a description of existing conditions, and will show the locations of transects and photo points, along with year zero monitoring data and photos. A landscape professional or wetland biologist will perform condition monitoring of the wetland and buffer areas annually in the fall. A written report describing the monitoring results will be submitted to the MDRT after each site inspection of each monitored year. Final inspection for a given wetland and/or its buffer will occur five years after the monitoring period was triggered. The contracted consultant will prepare a report as to the success of the project.

**Definition of Success:** The wetland buffer vegetation management areas shall meet the following performance standards:

Years 1 through 5: Maintain a minimum density of 20-foot centers for trees.

### **Performance Standards**

Performance Standard 1: There shall be a minimum of 20-foot relative density tree cover in the wetland buffer vegetation management area after the first year post-clearing and grading; and a minimum of 80 percent cover by native understory plants throughout the monitoring period.

Performance Standard 2: There shall be less than 10 percent cover of weedy/invasive cover in the wetland buffer vegetation management area for all five years of the monitoring period. Note: 10% coverage is not a threshold that triggers invasive species management. Invasive species must be managed following any monitoring event where they are observed.

### **MAINTENANCE**

The wetland buffer vegetation management area may require periodic maintenance by the Applicant and/or its agent to remove undesirable species and replace windthrow. Maintenance shall occur in accordance with King County Critical Areas Mitigation Guidelines (2012), King County Critical Areas: Restoration & Enhancement in King County (2012), and approved plans. Maintenance may include, but will not be limited to, removal of competing grasses (by hand if necessary), irrigation, replacement of plant mortality, and the replacement of mulch for each maintenance period. Chemical control, only if approved by the MDRT, shall be applied by a licensed applicator following all label instructions.

**Duration and Extent:** In order to achieve performance standards, the Applicant shall have the wetland buffer vegetation management area maintained for the duration of the five-year monitoring period. Maintenance will include: watering, weeding around the base of installed plants (if any), pruning, replacement, re-staking, removal of all classes of noxious weeds (see Washington State Noxious Weeds List, WAC 16-750-005) as well as Himalayan blackberry, and any other measures needed to ensure plant survival. The Applicant's landscape designer or wetland biologist shall direct all maintenance.

**Survival:** If plantings are deemed necessary, the Applicant shall be responsible for the health of 100% of all newly installed plants for *one growing season* after installation has been accepted by the

MDRT. A growing season for these purposes is defined as occurring from spring to spring (March 15 to March 15 of the following year). For fall installation (often required), the growing season will begin the following spring. The Applicant shall replace any plants that are failing, weak, defective in manner of growth, or dead during this growing season, as directed by the Applicant's landscape designer, wetland biologist, or the MDRT.

**Herbicides / Pesticides:** Chemical controls shall not be used in the wetland buffer vegetation management area, sensitive areas, or their buffers. However, limited use of herbicides may be approved depending on site-specific conditions, only if approved by the MDRT.

**General:** The Applicant shall be responsible for general maintenance activities such as the replacement of any vandalized or damaged signs, habitat features, fences, or other structural components of this monitoring site.

### CONTINGENCY PLAN

If the gross density of the existing forest falls below the required 20-foot centers, supplemental trees will be added to the existing buffer areas per the specifications identified below. Other elements of a contingency plan may include, but will not be limited to: more aggressive weed control, pest control, mulching, replanting with larger plant material, species substitution, fertilization, soil amendments, and/or irrigation.

The following table provides recommendations of species and spacings:

<b>Common Name</b>	<b>Latin Name</b>	<b>Size</b>	<b>Spacing</b>
Douglas fir	<i>Pseudotsuga menziesii</i>	Min. 3' tall	15'
Western hemlock	<i>Tsuga heterophylla</i>	Min. 3' tall	15'

If plantings are deemed necessary and added to the existing forest, the five-year monitoring and maintenance plan will include survival of planted species.

### PROJECT NOTES

#### **Inspections**

A wetland biologist shall be contracted by the Applicant to periodically inspect the wetland buffer vegetation management area. Minor adjustments to the original design may be necessary prior to and during construction due to unusual or hidden site conditions. The Applicant's consultant will make these recommendations to the MDRT.

#### **Erosion and Disturbance Control Measures**

Erosion control methods (e.g.: silt fence) shall be used to prevent silt-laden water from entering sensitive areas. If high flow conditions that may cause siltation are encountered during this project, work shall stop until the flow subsides.

### PLANTING NOTES (IF PLANTING IS DEEMED NECESSARY)

Plant in the early spring or late fall and obtain all plants from a reputable nursery. Care and handling of all plant materials will be extremely important to the overall success of the project. The origin of all plant materials specified in this plan shall be native plants, nursery grown in the Puget Sound region of Washington. Some limited species substitution may be allowed, only with the agreement of the Applicant's landscape designer, wetland biologist, or the MDRT.

### **Pre-Planting Meeting**

Prior to control of invasive species or installation of mitigation plantings, a site meeting between the contracted landscaper and the consulting biologist shall occur to resolve any questions that may arise. During this meeting a discussion regarding plant spacing and locations of plant species including wetland versus buffer species shall occur between the Applicant's landscape contractor and the consulting biologist.

### **Handling**

Plants shall be handled so as to avoid all damage, including breaking, bruising, root damage, sunburn, drying, freezing or other injury. Plants must be covered during transport. Plants shall not be bound with wire or rope in a manner that could damage branches. Protect plant roots with shade and wet soil in the time period between delivery and installation. Do not lift container stock by trunks, stems, or tops. Do not remove from containers until ready to plant. Water all plants as necessary to keep moisture levels appropriate to the species horticultural requirements. Plants shall not be allowed to dry out. All plants shall be watered thoroughly immediately upon installation. Soak all containerized plants thoroughly prior to installation. Bare root plants are subject to the following special requirements, and shall not be used unless planted between November 1 and March 1, and only with the permission of the Applicant's landscape designer, wetland biologist, or the MDRT. Bare root plants must have enough fibrous root to ensure plant survival. Roots must be covered at all times with mud and/or wet straw, moss, or other suitable packing material until time of installation. Plants whose roots have dried out from exposure will not be accepted at installation inspection.

### **Storage**

Plants stored by the Applicant for longer than one month prior to planting shall be planted in nursery rows, and treated in a manner suitable to those species horticultural requirements. Plants must be re-inspected by the Applicant's wetland biologist or landscape designer prior to installation.

### **Damaged Plants**

Damaged, dried out, or otherwise mishandled plants will be rejected at installation inspection. All rejected plants shall be immediately removed from the site.

### **Plant Names**

Plant names shall comply with those generally accepted in the native plant nursery trade. Any question regarding plant species or variety shall be referred to the Applicant's landscape designer, wetland biologist, or the MDRT. All plant materials shall be true to species and variety and legibly tagged.

### **Quality and Condition**

Plants shall be normal in pattern of growth, healthy, well branched, vigorous, with well-developed root systems, and free of pests and diseases. Damaged, diseased, pest-infested, scraped, bruised, dried out, burned, broken, or defective plants will be rejected. Plants with pruning wounds over 1" in diameter will be rejected.

## **Roots**

All plants shall be balled and burlapped or containerized, unless explicitly authorized by the Applicant's landscape designer or wetland biologist. Rootbound plants or B&B plants with damaged, cracked, or loose rootballs (major damage) will be rejected. Immediately before installation, plants with minor root damage (some broken and / or twisted roots) must be root-pruned. Matted or circling roots of containerized plantings must be pruned or straightened and the sides of the root ball must be roughened from top to bottom to a depth of approximately half an inch in two to four places. Bare root plantings of woody material are allowed only with permission from the Applicant's landscape designer, wetland biologist, or the MDRT.

## **Sizes**

Plant sizes shall be the size indicated in the plant schedule in approved plans. Larger stock may be acceptable provided that it has not been cut back to the size specified, and that the root ball is proportionate to the size of the plant. Smaller stock may be acceptable, and preferable under some circumstances, based on site-specific conditions. Measurements of caliper, branching, and balling and burlapping shall conform to the American Standard of Nursery Stock by the American Association of Nurserymen (latest edition).

## **Form**

Evergreen trees shall have single trunks and symmetrical, well-developed form. Deciduous trees shall be single trunked unless specified as multi-stem in the plant schedule. Shrubs shall have multiple stems and be well branched.

## **Timing of Planting**

Unless otherwise approved by the MDRT, all planting shall occur between November 1 and March 1. Overall, the earlier plants go into the ground during the dormant period, the more time they have to adapt to the site and extend their root systems before the water demands of spring and summer.

## **Installation Timing for Replacement Plants**

Replacement plants shall be installed between September 15 and January 15, unless otherwise determined by the Applicant's landscape designer, wetland biologist, or the MDRT.

## **Standards for Replacement Plants**

Replacement plants shall meet the same standards for size and type as those specified for the original installation unless otherwise directed by the Applicant's landscape designer, wetland biologist, or the MDRT.

## **Replanting**

Plants that have settled in their planting pits too deep, too shallow, loose, or crooked shall be replanted as directed by the Applicant's landscape designer, wetland biologist, or the MDRT.

## **Irrigation / Watering**

Water should be provided during the dry season (July 1 through October 15) for the first two years after installation to insure plant survival and establishment. A temporary above ground irrigation

system and/or water truck should provide water. Water should be applied at a rate of 1 inch of water twice per week for year one and 1 inch per week during year two.

### **Weeding**

Existing and exotic vegetation in the mitigation areas will be hand weeded from around all newly installed plants at the time of installation and on a routine basis throughout the monitoring period. No chemical control of vegetation on any portion of the site is allowed without the written permission of the MDRT.

### **Soil Amendments**

Unless otherwise specified and approved by the MDRT, organic matter (compost or approved equal) will be incorporated into the portions of the planting area that are significantly disturbed, and are not to include areas inside the dripline of existing trees and shrubs. One unit of loose, well-composted organic material should be incorporated with two units of silt loam topsoil to a depth of eight to ten inches (only three to four inches within three feet of existing drip lines) and mixed thoroughly. Soil amendments should be used only as necessary.

### **Site Conditions**

The Applicant's contractor shall immediately notify the Applicant's landscape designer or wetland biologist of drainage or soil conditions likely to be detrimental to the growth or survival of plants. Planting operations shall not be conducted under the following conditions: freezing weather, when the ground is frozen, excessively wet weather, excessively windy weather, or in excessive heat.

### **Planting Pits**

Planting pits shall be circular or square with vertical sides, and shall be 6" deeper and 12" larger in diameter than the root ball of the plant. Break up the sides of the pit in compacted soils. Set plants upright in pits. Burlap shall be removed from the planting pit. Backfill shall be worked back into holes such that air pockets are removed without adversely compacting down soils.

### **Staking**

Most shrubs and many trees DO NOT require any staking. If the plant can stand-alone without staking in a moderate wind, do not use a stake. If the plant needs support, then strapping or webbing should be used as low as possible on the trunk to loosely brace the tree with two stakes. Do not brace the tree tightly or too high on the trunk. If the tree is unable to sway, it will further lose the ability to support itself. Do not use wire in a rubber hose for strapping as it exerts too much pressure on the bark. As soon as supporting the plant becomes unnecessary, remove the stakes. All stakes must be removed within two (2) years of installation.

### **Plant Location**

Colored surveyors ribbon or other appropriate marking shall be attached to the installed plants to assist in locating the plants while removing the competing non-native vegetation and during the monitoring period.

### **Arrangement and Spacing**

The plants shall be arranged in a pattern with the appropriate numbers, sizes, species, and distribution that are required in accordance with the approved plans. The actual placement of individual plants shall mimic natural, asymmetric vegetation patterns found on similar undisturbed sites in the area. Spacing of the plantings may be adjusted to maintain existing vegetation with the agreement of the Applicant's landscape designer, wetland biologist, or the MDRT.

**Inspection(s)**

A wetland biologist shall be present on site to inspect the plants prior to planting. Minor adjustments to the original design may be required prior to and during construction.

**Mulch**

All landscaped areas denuded of vegetation and soil surface surrounding all planting pit areas shall receive no less than 2 to 4 inches of organic compost or arborist's mulch after planting. Compost or certified mulch shall be kept well away (at least 2 inches) from the trunks and stems of woody plants.

**USE OF THIS REPORT**

This Wetland Buffer Vegetation Management Plan for The Villages MPD Phase 2 Plat C is supplied to BD Village Partners, LP as required by the City of Black Diamond. This report is based largely on readily observable conditions and, to a lesser extent, on readily ascertainable conditions. No attempt has been made to determine hidden or concealed conditions.

The laws applicable to wetlands are subject to varying interpretations and may be changed at any time by the courts or legislative bodies. This report is intended to provide information deemed relevant in the Applicant's attempt to comply with the laws now in effect.

The work for this report has conformed to the standard of care employed by wetland ecologists. No other representation or warranty is made concerning the work or this report and any implied representation or warranty is disclaimed.

*Wetland Resources, Inc.*

Scott Brainard, PWS  
*Principal Ecologist*





11415 NE 128<sup>th</sup> St Suite 110 Kirkland WA 98034 • (425)820-3420 • FAX (425)820-3437  
www.americanforestmanagement.com

October 28<sup>th</sup>, 2013

Mr. Colin Lund  
Yarrow Bay Holdings  
10220 NE Points Drive, Suite 310  
Kirkland, WA 98033

RE: The Villages MPD Phase 2 Plat C Preliminary Plat Application

Dear Mr. Lund:

At your request, we have completed an inventory of significant trees within the Villages MPD Phase 2 Plat C Preliminary Plat (approximately 136 acres). The tree inventory area included the area to be developed, and the park area (41.14 acres). The following report summarizes the tree data collected which will be used to comply with the the City of Black Diamond's tree mitigation requirements. The field work was completed by Kelly Wilkinson and Jesse Saunders on October 25<sup>th</sup>, 2013.

The tree inventory area is comprised of 41.14 acres. All species over 6" DBH (diameter at 4.5' above ground), were inventoried on sample plots, even though some species present are not considered "significant" under city code. One of these non-significant species, red alder, exists in minor numbers on the property. In the summary table that follows, red alder is not included. Please refer to the cruise reports at the end of this report for non-significant tree information.

In this report I've included a copy of the clearing limits map showing the area and acreage that was surveyed, a map of the plot locations and a table showing the species, diameter and count of significant trees.

#### **Stand Description**

The forest stand is comprised primarily of planted Douglas-fir, with a minor component of volunteer red alder, big leaf maple, red cedar and western hemlock. The average DBH is 14" with a tree per acre count of significant species of 193. The estimated total significant tree count is 7,969 trees. Scattered infections of laminated root rot were found throughout the stand.

The forest cover primarily consists of sword fern, vine maple, salmonberry, Oregon grape and salal. There are some invasive species present, herb Robert, Scotch broom and English holly.

### **Inventory Methodology**

The subject area was inventoried using fixed plot sampling. The inventory software used was "Superace Timber Cruising Software", which is the industry standard. Inventory plots were established at a rate of approximately one plot per one acre. A total of 42 plots were sampled in 41.14 acres of forest cover. The plot sizes were 1/50<sup>th</sup> acre. The plot radius size was chosen to sample an average of five trees per plot. A target sampling error of 7.5% at one standard deviation was desired to get an accurate estimate of trees per acre over the entire project area. See the attached cruise map for plot locations.

### **Summary Tables**

The following tables indicate the number of trees per acre by species and diameter classes. Significant trees were broken out into diameter classes per Black Diamond City code (6"-9") (10"-12") (13"-16") (>17"). Non-significant tree species are not included in the summary table.

#### **Tree Summary (Trees per Acre)**

<b>Species</b>	<b>6" - 9"</b>	<b>10" - 12"</b>	<b>13" - 16"</b>	<b>17" +</b>	<b>Total</b>
<b>Douglas-fir</b>	21	41	92	37	191
<b>Western Hemlock</b>			1		1
<b>Total</b>	21	41	93	37	193

### **Sampling Error**

The tree per acre sampling error was computed at 6.4% at one standard deviation for the inventory. This means that 68.1 times out of 100 the actual tree per acre count will be within 6.4%. The other 32 times out of 100 the actual tree count will be above 6.4%. At 2 standard deviations, the sampling error is 10.4%. This means that 95.3 times out of 100, the actual tree count will be within 12.8%.

Please call if you have any questions or if I can be of further assistance.

Sincerely,

### **Kelly Wilkinson**

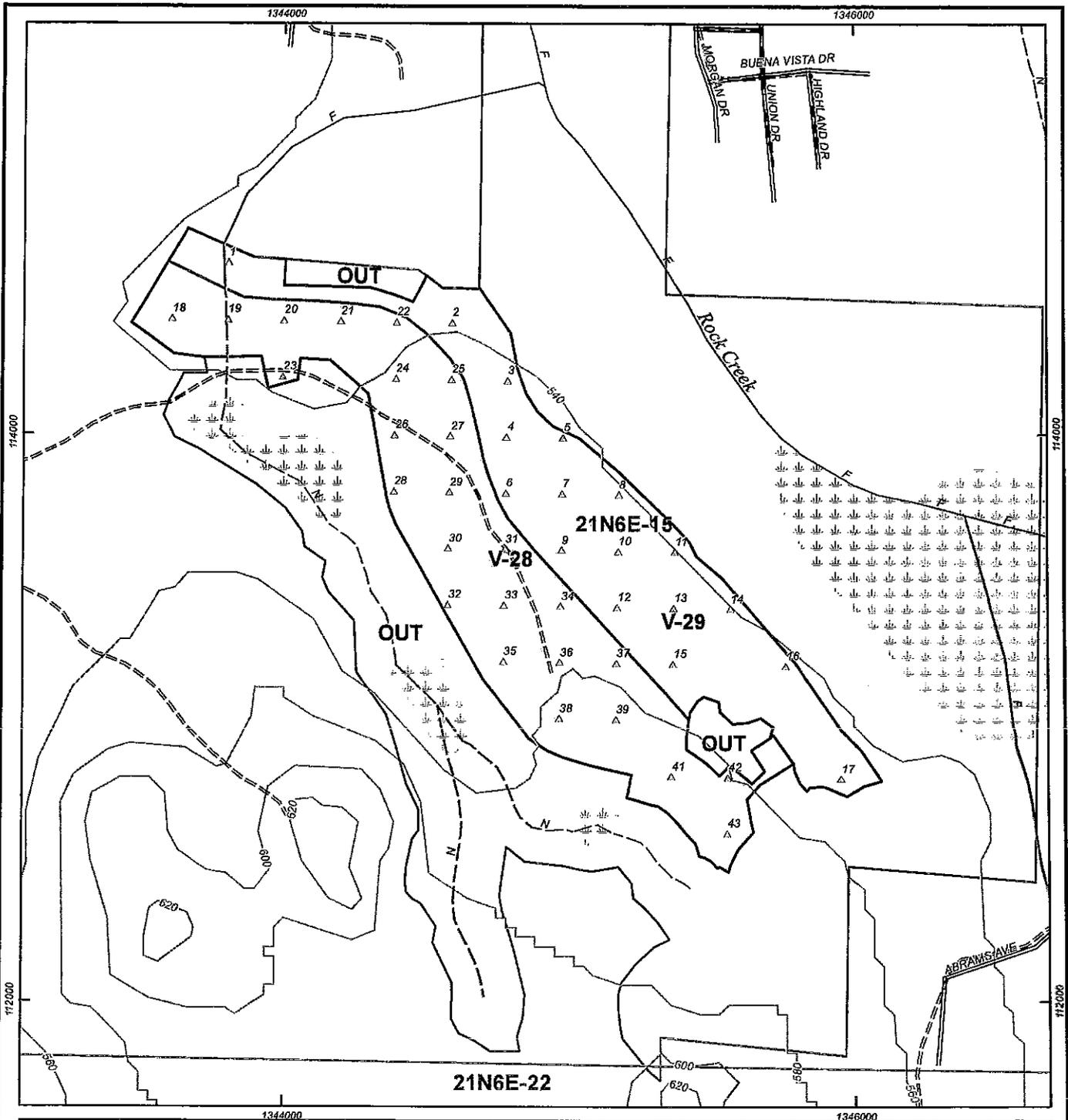
**Forester** | American Forest Management, Inc.

Tel: (425) 820-3420 | Email: [kelly.wilkinson@amforem.biz](mailto:kelly.wilkinson@amforem.biz)

Enclosures:

Orthophoto Plot Vicinity Map  
Orthophoto Plot Location Map  
Topography Plot Location Map

Superace Cruising Reports  
Stand Table Summary  
Type Statistics



- △ Plot
- ▭ V-28; V-29
- ▭ OUT
- 20' contour

Project boundaries are approximate

Coordinate system: WA State Plane, North, feet, NAD83

**Cruise Notes**

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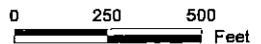
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Number of plots:

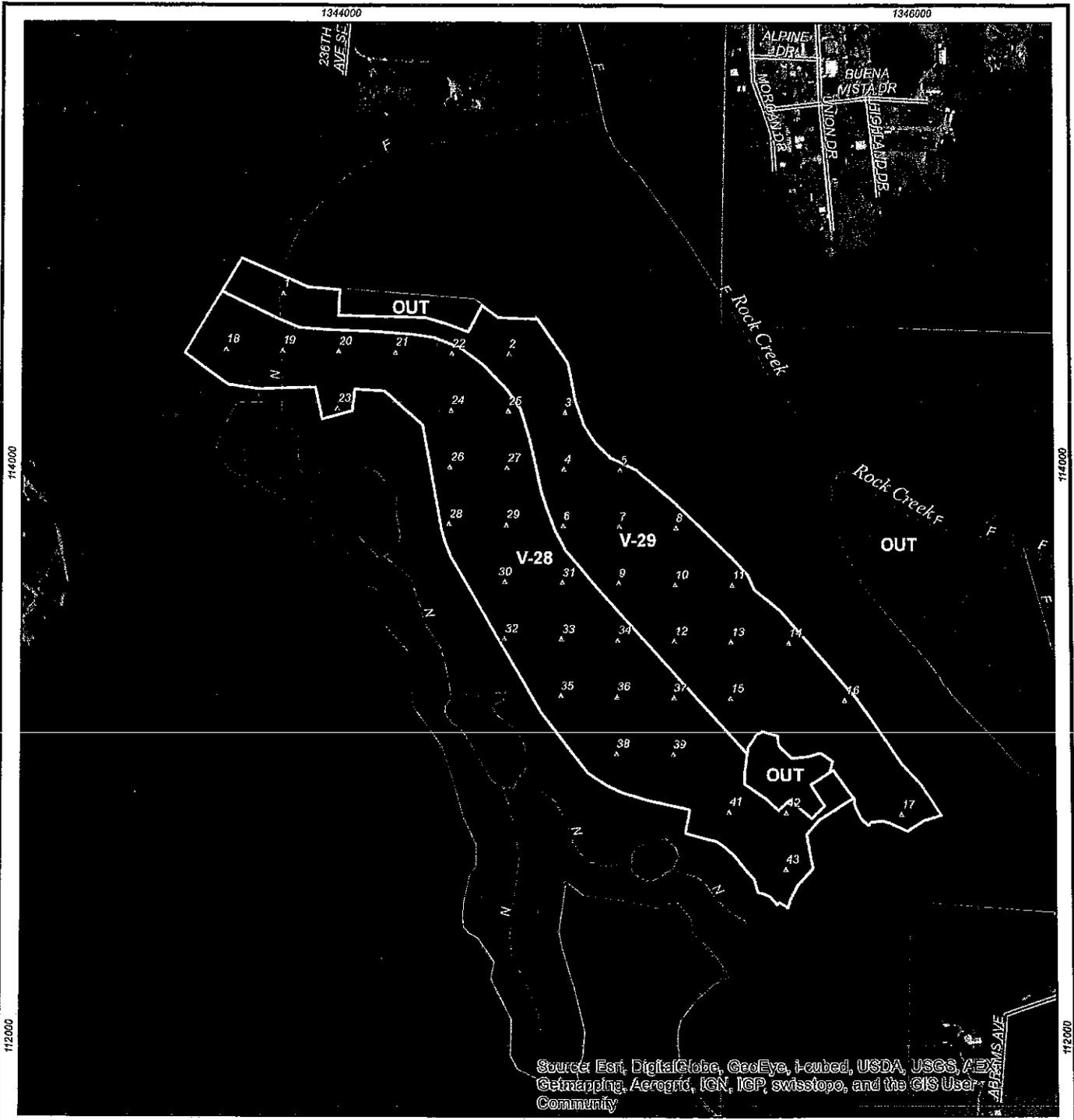
3x3 ch grid

1 inch = 500 feet



American Forest Management, Inc.  
Kirkland, WA: 11/4/2013

**The Villages V-28 and V-29 Cruise Map**  
Sec 15 - T 21 N, R 6 E, King County



Source Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community

<p>△ Plot</p> <p>— V-28; V-29 boundary</p> <p>□ OUT</p>	<p><b>Cruise Notes</b></p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>Number of plots: _____ 3x3 ch grid</p>	
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Project boundaries are approximate

Coordinate system: WA State Plane, North, feet, NAD83

1 inch = 500 feet



American Forest Management, Inc.  
Kirkland, WA: 11/4/2013

**The Villages V-28 and V-29 Cruise Map**  
Sec 15 - T 21 N, R 6 E, King County







TC PSTATS		<b>PROJECT STATISTICS</b>							PAGE	1
Yarrow Bay		PROJECT		V28 V29			DATE	11/4/2013		
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt
21N	06E	15	BD	V28		41.14	42	163	S	W
21N	06E	15	BD	V29						
		PLOTS		TREES	PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES			
TOTAL		42		163	3.9					
CRUISE		41		163	4.0	7,969	2.0			
DBH COUNT										
REFOREST										
COUNT										
BLANKS		1								
100 %										
<b>STAND SUMMARY</b>										
SAMPLE TREES		TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
DOUG FIR		161	191.3	14.0	17	55	205.0			
WHEMLOCK		1	1.2	14.0	17	0	1.3			
R ALDER		1	1.2	9.0	17		.5			
<b>TOTAL</b>		<b>163</b>	<b>193.7</b>	<b>14.0</b>	<b>17</b>		<b>206.7</b>			
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL	68.1	COEFF		SAMPLE TREES - BF			# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR										
WHEMLOCK										
R ALDER										
<b>TOTAL</b>										
CL	68.1	COEFF		SAMPLE TREES - CF			# OF TREES REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR										
WHEMLOCK										
R ALDER										
<b>TOTAL</b>										
CL	68.1	COEFF		TREES/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		42.8	6.6	179	191	204				
WHEMLOCK		648.1	99.9	0	1	2				
R ALDER		648.1	99.9	0	1	2				
<b>TOTAL</b>		<b>41.2</b>	<b>6.4</b>	<b>181</b>	<b>194</b>	<b>206</b>	<b>68</b>	<b>17</b>	<b>8</b>	
CL	68.1	COEFF		BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR		43.7	6.7	191	205	219				
WHEMLOCK		648.1	99.9	0	1	3				
R ALDER		648.1	99.9	0	1	1				
<b>TOTAL</b>		<b>42.6</b>	<b>6.6</b>	<b>193</b>	<b>207</b>	<b>220</b>	<b>73</b>	<b>18</b>	<b>8</b>	
CL	68.1	COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR										
WHEMLOCK										
R ALDER										
<b>TOTAL</b>										
CL	68.1	COEFF		NET CUFT FT/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	10	15	
DOUG FIR										

**PROJECT STATISTICS**

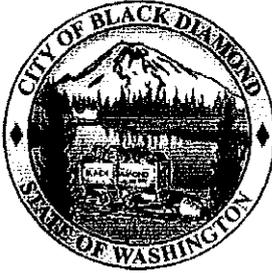
Yarrow Bay

PROJECT **V28 V29**

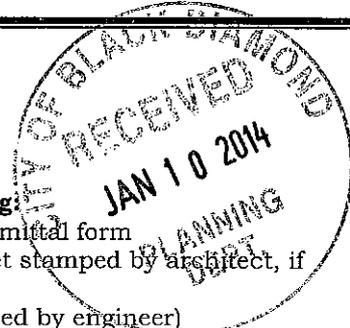
DATE 11/4/2013

TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
21N	06E	15	BD	V28	41.14	42	163	S	W	
21N	06E	15	BD	V29						
CL	68.1		COEFF		NET CUFT FT/ACRE		# OF PLOTS REQ.	INF. POP.		
SD:	1.00		VAR.	S.E.%	LOW	AVG	HIGH	5	10	15

WHEMLOCK  
 R ALDER  
**TOTAL**



# REVISION/CORRECTION SUBMITTAL FORM



**Submittal Requirements:**

All revisions / correction submittals **MUST** contain the following:

1. A completed City of Black Diamond Revision/Correction submittal form
2. Two (2) sets of revised and/or corrected drawings/sheets (wet stamped by architect, if applicable).
3. Revised structural calculations, if applicable (must be stamped by engineer)
4. A written letter to the City that shows an itemized summary of your submittal (must include sheet and detail numbers)
5. All changes **MUST BE CLOUDED** or **HIGHLIGHTED** on each plan set

Date: 1/10/14

Permit #: PLN13-0027 (2C)

Property Address: See the Phase 2C Project narrative/plot drawings

Project Name: The Villages MPD Phase 2 Preliminary Plat C

Contact Person: Colin Lund

Phone: (425) 898-2100

Email: clundeyanowboyholdings.com

**TYPE OF SUBMITTAL:**

**SUPPLEMENTAL INFO.**

**REVISION:** A change the applicant has made to a plan that is either:

1. An approved plan already issued by the City or
2. A project under current plan review

**CORRECTION:** An applicant response to a correction letter written by the City to the applicant

Permit Issued?  Yes  No \*A plan check fee for revision is \$84 per hour with a minimum of \$42 for ½ hour

**Please describe revision/correction submittal:**

Wetland Buffer Vegetation Management Plan for The Villages Phase 2 Plat C, dated December 19, 2013, prepared by Wetland Resources, Inc.

**Sheets Affected:** \_\_\_\_\_ If more than two (2) sheets will be changed, please submit two (2) new full sets of plans. Revisions on issued permits only require submittal of the affected sheets.

**For City Use Only:**

REQ'D APPROVAL	CHECKED BY	ROUTE TO	DATE	INITIAL	COMMENTS	FEES
( )	1. BUILDING	_____	_____	_____	_____	_____
( )	2. PLANNING	_____	_____	_____	_____	_____
( )	3. FIRE	_____	_____	_____	_____	_____
( )	4. PW	_____	_____	_____	_____	_____
( )	5	_____	_____	_____	_____	_____

**TOTAL \$**



PLN13-0027

Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance

9505 19th Avenue S.E.  
Suite 106  
Everett, Washington 98208  
**(425) 337-3174**  
Fax (425) 337-3045

**WETLAND BUFFER VEGETATION MANAGEMENT PLAN**

**FOR**

**THE VILLAGES**  
**PHASE 2 PLAT C**

*Wetland Resources, Inc.* Project #08035

Prepared By:

Wetland Resources, Inc.  
9505 - 19th Ave SE, Suite 106  
Everett, WA 98208  
(425) 337-3174

For:

BD Village Partners, LP  
Attn: Colin Lund  
10220 NE Points Dr., Suite 310  
Kirkland, WA 98033



December 19, 2013

## **TABLE OF CONTENTS**

<b>INTRODUCTION</b>	<b>1</b>
<b>SITE DESCRIPTION</b>	<b>2</b>
<b>EXISTING CONDITIONS</b>	<b>2</b>
<b>POST-DEVELOPMENT CONDITIONS</b>	<b>3</b>
<b>PROJECT MONITORING PROGRAM</b>	<b>3</b>
<b>PROJECT SUCCESS AND COMPLIANCE</b>	<b>4</b>
<b>MAINTENANCE</b>	<b>5</b>
<b>CONTINGENCY PLAN</b>	<b>6</b>
<b>PROJECT NOTES</b>	<b>6</b>
<b>PLANTING NOTES (IF PLANTING IS DEEMED NECESSARY)</b>	<b>7</b>
<b>USE OF THIS REPORT</b>	<b>10</b>
<b>WETLAND BUFFER VEGETATION MANAGEMENT PLAN MAP</b>	<b>SHEET 1/1</b>

**ATTACHMENT - OCTOBER 28, 2013, AMERICAN FOREST MANAGEMENT TREE INVENTORY**

**THE VILLAGES MPD PHASE 2 PLAT C  
WETLAND BUFFER VEGETATION MANAGEMENT PLAN**

**Introduction**

The purpose of this Wetland Buffer Vegetation Management Plan for The Villages MPD Phase 2 Plat C is to comply with the provisions set forth in BDMC 19.10.230(F). Given that the Applicant seeks preliminary plat approval at this time, the vegetation management plan area is defined as that portion of the buffer, which lies between the proposed development areas and the delineated wetland areas.

Taken from BDMC 19.10.230(F):

*Vegetation management. In order to maintain effective buffer conditions and functions, a vegetation management plan shall be required for all buffer areas, to include:*

*1. Maintaining adequate cover of native vegetation including trees and understory; if existing tree cover is less than a relative density of twenty, planting shall be required consisting of a density of three hundred seedlings per acre or the equivalent;*

*2. Provide a dense screen of native evergreen trees at the perimeter of the buffer. Clearing of existing second growth forest generally results in trees with little canopy at or near the ground level:*

*a. Core wetland and stream complex buffers generally will require interplanting among existing trees within an area of thirty to fifty feet to provide for regeneration of native species and prevent the establishment of invasive species.*

*b. Other wetland buffers will require plantings if existing vegetation is not sufficient to prevent viewing adjacent development from within the buffer or penetration of light and glare into the buffer or to prevent establishment of invasive species.*

*c. Planting specifications generally shall consist of as many rows of the following units as required to accomplish the management objectives:*

*(i) Two rows of three-foot high stock of native evergreens at a triangular spacing of fifteen feet, or*

*(ii) Three rows of gallon containers at a triangular spacing of eight feet.*

*3. Fencing may be required in order to separate sensitive areas from developed areas;*

*4. Provide a plan for control of invasive weeds, and remove existing invasive species;*

*5. Provide for a monitoring and maintenance plan for a period of at least five years, except this provision may be waived for single-family residential lots;*

*6. Vegetation management plans for all wetlands may provide for preservation of view corridors from existing single-family residences by the placement of new vegetation in a manner that frames views, provided that the same density is maintained and key functions such as shading for temperature attenuation and habitat functions are maintained.*

## **SITE DESCRIPTION**

The Villages MPD Phase 2 Plat C (Phase 2 Plat C) site is located approximately 1.3 miles west of the intersection of Roberts Drive and SR 169, south of Roberts Drive. The project site is located generally within the southeast quarter and portions of the southwest quarter of Section 15, Township 21 North, Range 6 East, and includes very limited areas of the northwest quarter of the northeast quarter of Section 22, Township 21 North, Range 6 East, all within the city limits of Black Diamond, Washington. The preliminary plat is situated on approximately 136 acres consisting of the following King County Tax Parcels: 152106-9108, 152106-9096 and 222106-9004. Topography undulates with alternating swaths of uplands and lowlands and generally trends toward an east aspect. There is a logging road system on this site that is used by unauthorized off-road vehicle (ORV) users, pedestrians and pets. No existing structures exist within the boundary of the Phase 2 Plat C site. Most of the site and surrounding land has consisted of managed forest plantations for decades, which was most recently logged in the late 70's to early 80's. Due to this forest management activity, the site is typically forested with an even-aged stand of Douglas fir and a low lying, native understory.

Six wetlands were identified within or partially within the boundary of, the proposed Phase 2 Plat C site: Wetlands E1, E7, E8, E10, TOS and 213. Wetland E1 is a Category II with a 110-foot buffer in its northern basin and a 225-foot buffer in its southern basin (as noted on the preliminary plat drawings). Wetlands E7, E8, and E10 are Category III wetlands with a 110-foot designated buffer (DOE, Black Diamond classifications). Wetland TOS is part of the Core Wetland Complex identified within BDMC §19.10.230 and is therefore a Category I wetland with a designated 225-foot protective buffer. Lastly, Wetland 213 is a Category IV wetland with a 40-foot designated buffer.

## **EXISTING CONDITIONS**

Forest areas within the boundary of Phase 2 Plat C are second or third generation commercial forestry plantings. As such, they are typically maintained at a minimum relative density of 20-foot spacing (or 109 trees per acre).

American Forest Management (AFM) performed the significant tree inventory for the Phase 2 Plat C project site (included as Appendix A of this WBVMP). The inventory was prepared on October 28, 2013 in conjunction with the Phase 2 Plat C application. This inventory was limited to the proposed development portion of the site (41.14 acres) rather than the entire Phase 2 Plat C property. The tree summary table, found on page 2 of the AFM report, shows that relative significant tree density is equal to 193 trees per acre. Trees planted on 20-foot centers yield 108.9 trees per acre. Therefore, existing relative density is approximately 15-foot centers without including black cottonwood and red alder. Therefore, no additional seedlings will initially be required. It is worth noting that gross density does not take into consideration the areas that are not forested (existing gravel roads and scrub-shrub wetlands).

It is important to note that the definition of “significant tree” adopted by the City of Black Diamond excludes all trees smaller than six-inch diameter at breast height (dbh), and all black cottonwood and red alder (regardless of dbh). From an ecological perspective, the functions and values provided by “non-significant trees” are consistent with functions and values provided by “significant trees.” Therefore, “non-significant trees” should contribute to the total density calculation within the project area. Black cottonwood and red alder are extremely common tree species found in the vicinity of the project area, and their total density represents a non-trivial addition to the significant tree data. If these “non-significant trees” were included in the overall inventory, the resulting density would be higher than the 15-foot spacing identified in the AFM report.

### **POST-DEVELOPMENT CONDITIONS**

Given the nature of the second and third growth forests and the proposed development activity within Phase 2 Plat C, it is likely that some windthrow will occur, reducing the relative net density of the stand to above the current 15-foot density. It is not anticipated however that windthrow would reduce the relative density to below the required 20-foot center density. Provided that in its post developed condition the Vegetation Management Area will meet the required relative 20-foot center density, no additional plantings are proposed at this time. Given the existing and post developed density of native vegetation within the Vegetation Management Area, the conditions established in BDMC 19.10.230(F) are met.

### **PROJECT MONITORING PROGRAM**

Requirements for monitoring on a wetland by wetland basis, when clearing is adjacent to a wetland buffer:

1. Annual site inspections and reports to document that the minimum tree density and weedy/invasive coverages are maintained (once per year in the fall) for five years from the date of initial clearing activity adjacent to the buffer.
2. Initial compliance/as-built report of post development tree density.
3. Annual monitoring reports including final report (one report submitted in the fall of each monitored year) documenting the conditions observed during the annual site visits.

**Purpose for Monitoring:** The purpose for monitoring this vegetation management area shall be to evaluate its success. Success will be determined if monitoring shows at the end of five years that the definitions of success stated below are being met. The property owner shall grant access to the wetland buffer areas for inspection and maintenance to the contracted landscape and/or wetland specialist and the MDRT during the monitoring period or until the project is evaluated as successful.

**Monitoring:** Monitoring shall occur on a wetland-by-wetland basis, when clearing occurs adjacent to a wetland buffer. Monitoring shall be conducted annually for five years in accordance with the approved Wetland Buffer Vegetation Management Plan. The monitoring period will begin once the

MDRT receives written notification from a Professional Wetland Scientist confirming clearing and grading has been completed adjacent to a given wetland and/or its buffer.

**Vegetation Monitoring:** Sampling points or transects will be established for vegetation monitoring and photo points will be established from which photos will be taken throughout the monitoring period. Permanent sampling points (transect lines) must be identified on the site plans in the first monitoring report (they may be drawn on approved plans by hand). Each sampling point shall detail herbaceous, shrub, and tree coverage in accordance with the King County guidance document titled *Critical Areas: Restoration & Enhancement in King County* (2012). Monitoring of vegetation sampling points shall occur annually between May 15 and September 30 (prior to leaf drop), unless otherwise specified.

**Photo points:** No less than three permanent photo points will be established within the wetland buffer areas. Photographs by the Applicant's wetland consultant will be taken from these points to visually record the condition of the vegetation management area. Photos shall be taken annually between May 15 and September 30 (prior to leaf drop), unless otherwise specified.

**Monitoring Report Contents:** Monitoring reports shall be submitted to the MDRT by the Applicant's wetland consultant by October 31 of each year during the monitoring period. As applicable, monitoring reports must include descriptions / data for:

1. Site plan and vicinity map
2. Baseline condition discussion, including a description of observed field conditions (discussion will specifically relate to minimum tree density and invasive weed presence)
3. Historic description of project, including date of completion of clearing and grading, current year of monitoring, restatement of goals and performance standards
4. Plant density and observed windthrow and explanation of monitoring methodology in the context of assessing performance standards
5. Slope condition, site stability, any structures or special features
6. Wetland and buffer conditions, e.g., surrounding land use, use by humans, and/or wild and domestic creatures
7. Observed wildlife, including amphibians, avians, and others
8. Assessment of nuisance / exotic biota and recommendations for management
9. Soils, including texture, Munsell color, rooting, and oxidized rhizospheres
10. Receipts for any structural repair or replacement
11. Color photographs taken from permanent photo-points that shall be depicted on the monitoring report map

## PROJECT SUCCESS AND COMPLIANCE

**Criteria for Success:** Upon completion of the clearing and grading activity, an inspection by a qualified biologist hired by the Applicant will be made to determine plan compliance. A compliance report (as-built letter) will be supplied to the MDRT within 30 days after the completion of the clearing and grading activity. The letter will include a description of existing conditions, and will show the locations of transects and photo points, along with year zero monitoring data and photos.

A landscape professional or wetland biologist will perform condition monitoring of the wetland and buffer areas annually in the fall. A written report describing the monitoring results will be submitted to the MDRT after each site inspection of each monitored year. Final inspection for a given wetland and/or its buffer will occur five years after the monitoring period was triggered. The contracted consultant will prepare a report as to the success of the project.

**Definition of Success:** The wetland buffer vegetation management areas shall meet the following performance standards:

Years 1 through 5: Maintain a minimum density of 20-foot centers for trees.

### **Performance Standards**

Performance Standard 1: There shall be a minimum of 20-foot relative density tree cover in the wetland buffer vegetation management area after the first year post-clearing and grading; and a minimum of 80 percent cover by native understory plants throughout the monitoring period.

Performance Standard 2: There shall be less than 10 percent cover of weedy/invasive cover in the wetland buffer vegetation management area for all five years of the monitoring period. Note: 10% coverage is not a threshold that triggers invasive species management. Invasive species must be managed following any monitoring event where they are observed.

### **MAINTENANCE**

The wetland buffer vegetation management area may require periodic maintenance by the Applicant and/or its agent to remove undesirable species and replace windthrow. Maintenance shall occur in accordance with King County Critical Areas Mitigation Guidelines (2012), King County Critical Areas: Restoration & Enhancement in King County (2012), and approved plans. Maintenance may include, but will not be limited to, removal of competing grasses (by hand if necessary), irrigation, replacement of plant mortality, and the replacement of mulch for each maintenance period. Chemical control, only if approved by the MDRT, shall be applied by a licensed applicator following all label instructions.

**Duration and Extent:** In order to achieve performance standards, the Applicant shall have the wetland buffer vegetation management area maintained for the duration of the five-year monitoring period. Maintenance will include: watering, weeding around the base of installed plants (if any), pruning, replacement, re-staking, removal of all classes of noxious weeds (see Washington State Noxious Weeds List, WAC 16-750-005) as well as Himalayan blackberry, and any other measures needed to ensure plant survival. The Applicant's landscape designer or wetland biologist shall direct all maintenance.

**Survival:** If plantings are deemed necessary, the Applicant shall be responsible for the health of 100% of all newly installed plants for *one growing season* after installation has been accepted by the MDRT. A growing season for these purposes is defined as occurring from spring to spring (March 15 to March 15 of the following year). For fall installation (often required), the growing season will

begin the following spring. The Applicant shall replace any plants that are failing, weak, defective in manner of growth, or dead during this growing season, as directed by the Applicant's landscape designer, wetland biologist, or the MDRT.

**Herbicides / Pesticides:** Chemical controls shall not be used in the wetland buffer vegetation management area, sensitive areas, or their buffers. However, limited use of herbicides may be approved depending on site-specific conditions, only if approved by the MDRT.

**General:** The Applicant shall be responsible for general maintenance activities such as the replacement of any vandalized or damaged signs, habitat features, fences, or other structural components of this monitoring site.

### CONTINGENCY PLAN

If the gross density of the existing forest falls below the required 20-foot centers, supplemental trees will be added to the existing buffer areas per the specifications identified below. Other elements of a contingency plan may include, but will not be limited to: more aggressive weed control, pest control, mulching, replanting with larger plant material, species substitution, fertilization, soil amendments, and/or irrigation.

The following table provides recommendations of species and spacings:

<b>Common Name</b>	<b>Latin Name</b>	<b>Size</b>	<b>Spacing</b>
Douglas fir	<i>Pseudotsuga menziesii</i>	Min. 3' tall	15'
Western hemlock	<i>Tsuga heterophylla</i>	Min. 3' tall	15'

If plantings are deemed necessary and added to the existing forest, the five-year monitoring and maintenance plan will include survival of planted species.

### PROJECT NOTES

#### **Inspections**

A wetland biologist shall be contracted by the Applicant to periodically inspect the wetland buffer vegetation management area. Minor adjustments to the original design may be necessary prior to and during construction due to unusual or hidden site conditions. The Applicant's consultant will make these recommendations to the MDRT.

#### **Erosion and Disturbance Control Measures**

Erosion control methods (e.g.: silt fence) shall be used to prevent silt-laden water from entering sensitive areas. If high flow conditions that may cause siltation are encountered during this project, work shall stop until the flow subsides.

## **PLANTING NOTES (IF PLANTING IS DEEMED NECESSARY)**

Plant in the early spring or late fall and obtain all plants from a reputable nursery. Care and handling of all plant materials will be extremely important to the overall success of the project. The origin of all plant materials specified in this plan shall be native plants, nursery grown in the Puget Sound region of Washington. Some limited species substitution may be allowed, only with the agreement of the Applicant's landscape designer, wetland biologist, or the MDRT.

### **Pre-Planting Meeting**

Prior to control of invasive species or installation of mitigation plantings, a site meeting between the contracted landscaper and the consulting biologist shall occur to resolve any questions that may arise. During this meeting a discussion regarding plant spacing and locations of plant species including wetland versus buffer species shall occur between the Applicant's landscape contractor and the consulting biologist.

### **Handling**

Plants shall be handled so as to avoid all damage, including breaking, bruising, root damage, sunburn, drying, freezing or other injury. Plants must be covered during transport. Plants shall not be bound with wire or rope in a manner that could damage branches. Protect plant roots with shade and wet soil in the time period between delivery and installation. Do not lift container stock by trunks, stems, or tops. Do not remove from containers until ready to plant. Water all plants as necessary to keep moisture levels appropriate to the species horticultural requirements. Plants shall not be allowed to dry out. All plants shall be watered thoroughly immediately upon installation. Soak all containerized plants thoroughly prior to installation. Bare root plants are subject to the following special requirements, and shall not be used unless planted between November 1 and March 1, and only with the permission of the Applicant's landscape designer, wetland biologist, or the MDRT. Bare root plants must have enough fibrous root to ensure plant survival. Roots must be covered at all times with mud and/or wet straw, moss, or other suitable packing material until time of installation. Plants whose roots have dried out from exposure will not be accepted at installation inspection.

### **Storage**

Plants stored by the Applicant for longer than one month prior to planting shall be planted in nursery rows, and treated in a manner suitable to those species horticultural requirements. Plants must be re-inspected by the Applicant's wetland biologist or landscape designer prior to installation.

### **Damaged Plants**

Damaged, dried out, or otherwise mishandled plants will be rejected at installation inspection. All rejected plants shall be immediately removed from the site.

### **Plant Names**

Plant names shall comply with those generally accepted in the native plant nursery trade. Any question regarding plant species or variety shall be referred to the Applicant's landscape designer, wetland biologist, or the MDRT. All plant materials shall be true to species and variety and legibly tagged.

## **Quality and Condition**

Plants shall be normal in pattern of growth, healthy, well branched, vigorous, with well-developed root systems, and free of pests and diseases. Damaged, diseased, pest-infested, scraped, bruised, dried out, burned, broken, or defective plants will be rejected. Plants with pruning wounds over 1" in diameter will be rejected.

## **Roots**

All plants shall be balled and burlapped or containerized, unless explicitly authorized by the Applicant's landscape designer or wetland biologist. Rootbound plants or B&B plants with damaged, cracked, or loose rootballs (major damage) will be rejected. Immediately before installation, plants with minor root damage (some broken and / or twisted roots) must be root-pruned. Matted or circling roots of containerized plantings must be pruned or straightened and the sides of the root ball must be roughened from top to bottom to a depth of approximately half an inch in two to four places. Bare root plantings of woody material are allowed only with permission from the Applicant's landscape designer, wetland biologist, or the MDRT.

## **Sizes**

Plant sizes shall be the size indicated in the plant schedule in approved plans. Larger stock may be acceptable provided that it has not been cut back to the size specified, and that the root ball is proportionate to the size of the plant. Smaller stock may be acceptable, and preferable under some circumstances, based on site-specific conditions. Measurements of caliper, branching, and balling and burlapping shall conform to the American Standard of Nursery Stock by the American Association of Nurserymen (latest edition).

## **Form**

Evergreen trees shall have single trunks and symmetrical, well-developed form. Deciduous trees shall be single trunked unless specified as multi-stem in the plant schedule. Shrubs shall have multiple stems and be well branched.

## **Timing of Planting**

Unless otherwise approved by the MDRT, all planting shall occur between November 1 and March 1. Overall, the earlier plants go into the ground during the dormant period, the more time they have to adapt to the site and extend their root systems before the water demands of spring and summer.

## **Installation Timing for Replacement Plants**

Replacement plants shall be installed between September 15 and January 15, unless otherwise determined by the Applicant's landscape designer, wetland biologist, or the MDRT.

## **Standards for Replacement Plants**

Replacement plants shall meet the same standards for size and type as those specified for the original installation unless otherwise directed by the Applicant's landscape designer, wetland biologist, or the MDRT.

### **Replanting**

Plants that have settled in their planting pits too deep, too shallow, loose, or crooked shall be replanted as directed by the Applicant's landscape designer, wetland biologist, or the MDRT.

### **Irrigation / Watering**

Water should be provided during the dry season (July 1 through October 15) for the first two years after installation to insure plant survival and establishment. A temporary above ground irrigation system and/or water truck should provide water. Water should be applied at a rate of 1 inch of water twice per week for year one and 1 inch per week during year two.

### **Weeding**

Existing and exotic vegetation in the mitigation areas will be hand weeded from around all newly installed plants at the time of installation and on a routine basis throughout the monitoring period. No chemical control of vegetation on any portion of the site is allowed without the written permission of the MDRT.

### **Soil Amendments**

Unless otherwise specified and approved by the MDRT, organic matter (compost or approved equal) will be incorporated into the portions of the planting area that are significantly disturbed, and are not to include areas inside the dripline of existing trees and shrubs. One unit of loose, well-composted organic material should be incorporated with two units of silt loam topsoil to a depth of eight to ten inches (only three to four inches within three feet of existing drip lines) and mixed thoroughly. Soil amendments should be used only as necessary.

### **Site Conditions**

The Applicant's contractor shall immediately notify the Applicant's landscape designer or wetland biologist of drainage or soil conditions likely to be detrimental to the growth or survival of plants. Planting operations shall not be conducted under the following conditions: freezing weather, when the ground is frozen, excessively wet weather, excessively windy weather, or in excessive heat.

### **Planting Pits**

Planting pits shall be circular or square with vertical sides, and shall be 6" deeper and 12" larger in diameter than the root ball of the plant. Break up the sides of the pit in compacted soils. Set plants upright in pits. Burlap shall be removed from the planting pit. Backfill shall be worked back into holes such that air pockets are removed without adversely compacting down soils.

### **Staking**

Most shrubs and many trees DO NOT require any staking. If the plant can stand-alone without staking in a moderate wind, do not use a stake. If the plant needs support, then strapping or webbing should be used as low as possible on the trunk to loosely brace the tree with two stakes. Do not brace the tree tightly or too high on the trunk. If the tree is unable to sway, it will further lose the ability to support itself. Do not use wire in a rubber hose for strapping as it exerts too much pressure on the bark. As soon as supporting the plant becomes unnecessary, remove the stakes. All stakes must be removed within two (2) years of installation.

**Plant Location**

Colored surveyors ribbon or other appropriate marking shall be attached to the installed plants to assist in locating the plants while removing the competing non-native vegetation and during the monitoring period.

**Arrangement and Spacing**

The plants shall be arranged in a pattern with the appropriate numbers, sizes, species, and distribution that are required in accordance with the approved plans. The actual placement of individual plants shall mimic natural, asymmetric vegetation patterns found on similar undisturbed sites in the area. Spacing of the plantings may be adjusted to maintain existing vegetation with the agreement of the Applicant's landscape designer, wetland biologist, or the MDRT.

**Inspection(s)**

A wetland biologist shall be present on site to inspect the plants prior to planting. Minor adjustments to the original design may be required prior to and during construction.

**Mulch**

All landscaped areas denuded of vegetation and soil surface surrounding all planting pit areas shall receive no less than 2 to 4 inches of organic compost or arborist's mulch after planting. Compost or certified mulch shall be kept well away (at least 2 inches) from the trunks and stems of woody plants.

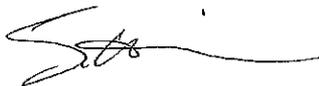
**USE OF THIS REPORT**

This Wetland Buffer Vegetation Management Plan for The Villages MPD Phase 2 Plat C is supplied to BD Village Partners, LP as required by the City of Black Diamond. This report is based largely on readily observable conditions and, to a lesser extent, on readily ascertainable conditions. No attempt has been made to determine hidden or concealed conditions.

The laws applicable to wetlands are subject to varying interpretations and may be changed at any time by the courts or legislative bodies. This report is intended to provide information deemed relevant in the Applicant's attempt to comply with the laws now in effect.

The work for this report has conformed to the standard of care employed by wetland ecologists. No other representation or warranty is made concerning the work or this report and any implied representation or warranty is disclaimed.

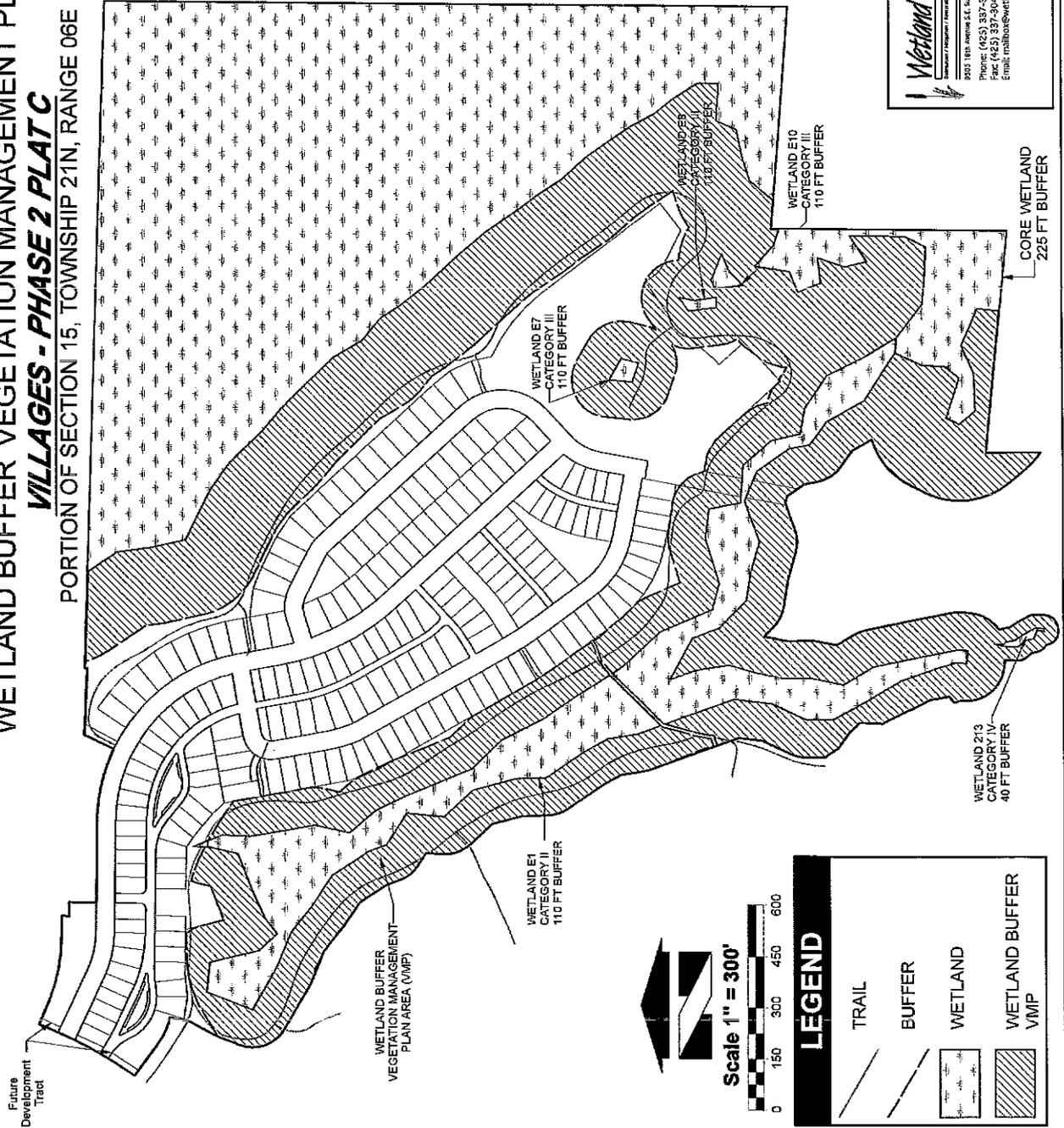
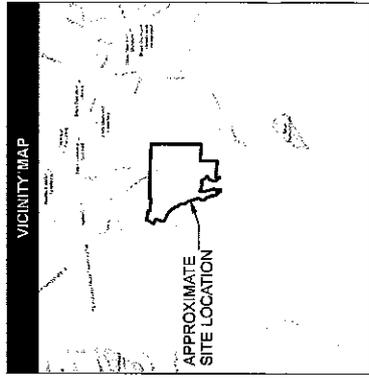
*Wetland Resources, Inc.*



Scott Brainard, PWS  
*Principal Ecologist*

**WETLAND BUFFER VEGETATION MANAGEMENT PLAN MAP**  
**VILLAGES - PHASE 2 PLAT C**

PORTION OF SECTION 15, TOWNSHIP 21N, RANGE 06E



Scale 1" = 300'



LEGEND	
	TRAIL
	BUFFER
	WETLAND
	WETLAND BUFFER VMP

**Wetland Resources, Inc.**  
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**WETLAND BUFFER VEGETATION MANAGEMENT PLAN MAP**  
**VILLAGES PHASE 2 PLAT C**  
 BLACK DIAMOND, WA

8D Village Partners, LP  
 Attn: Colin Lund  
 10220 NE Polaris Drive, Suite 310  
 Kirkland, WA 98033

Sheet 1/1  
 WRI Job #06033  
 Drawn By: N. Whiting  
 Date: 12-19-2013



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October 28<sup>th</sup>, 2013

Mr. Colin Lund  
Yarrow Bay Holdings  
10220 NE Points Drive, Suite 310  
Kirkland, WA 98033

RE: The Villages MPD Phase 2 Plat C Preliminary Plat Application

Dear Mr. Lund:

At your request, we have completed an inventory of significant trees within the Villages MPD Phase 2 Plat C Preliminary Plat (approximately 136 acres). The tree inventory area included the area to be developed, and the park area (41.14 acres). The following report summarizes the tree data collected which will be used to comply with the the City of Black Diamond's tree mitigation requirements. The field work was completed by Kelly Wilkinson and Jesse Saunders on October 25<sup>th</sup>, 2013.

The tree inventory area is comprised of 41.14 acres. All species over 6" DBH (diameter at 4.5' above ground), were inventoried on sample plots, even though some species present are not considered "significant" under city code. One of these non-significant species, red alder, exists in minor numbers on the property. In the summary table that follows, red alder is not included. Please refer to the cruise reports at the end of this report for non-significant tree information.

In this report I've included a copy of the clearing limits map showing the area and acreage that was surveyed, a map of the plot locations and a table showing the species, diameter and count of significant trees.

### **Stand Description**

The forest stand is comprised primarily of planted Douglas-fir, with a minor component of volunteer red alder, big leaf maple, red cedar and western hemlock. The average DBH is 14" with a tree per acre count of significant species of 193. The estimated total significant tree count is 7,969 trees. Scattered infections of laminated root rot were found throughout the stand.

The forest cover primarily consists of sword fern, vine maple, salmonberry, Oregon grape and salal. There are some invasive species present, herb Robert, Scotch broom and English holly.

### **Inventory Methodology**

The subject area was inventoried using fixed plot sampling. The inventory software used was "Superace Timber Cruising Software", which is the industry standard. Inventory plots were established at a rate of approximately one plot per one acre. A total of 42 plots were sampled in 41.14 acres of forest cover. The plot sizes were 1/50<sup>th</sup> acre. The plot radius size was chosen to sample an average of five trees per plot. A target sampling error of 7.5% at one standard deviation was desired to get an accurate estimate of trees per acre over the entire project area. See the attached cruise map for plot locations.

### **Summary Tables**

The following tables indicate the number of trees per acre by species and diameter classes. Significant trees were broken out into diameter classes per Black Diamond City code (6"-9") (10"-12") (13"-16") (>17"). Non-significant tree species are not included in the summary table.

#### **Tree Summary (Trees per Acre)**

<b>Species</b>	<b>6" - 9"</b>	<b>10" - 12"</b>	<b>13" - 16"</b>	<b>17" +</b>	<b>Total</b>
<b>Douglas-fir</b>	21	41	92	37	191
<b>Western Hemlock</b>			1		1
<b>Total</b>	21	41	93	37	193

### **Sampling Error**

The tree per acre sampling error was computed at 6.4% at one standard deviation for the inventory. This means that 68.1 times out of 100 the actual tree per acre count will be within 6.4%. The other 32 times out of 100 the actual tree count will be above 6.4%. At 2 standard deviations, the sampling error is 10.4%. This means that 95.3 times out of 100, the actual tree count will be within 12.8%.

Please call if you have any questions or if I can be of further assistance.

Sincerely,

**Kelly Wilkinson**

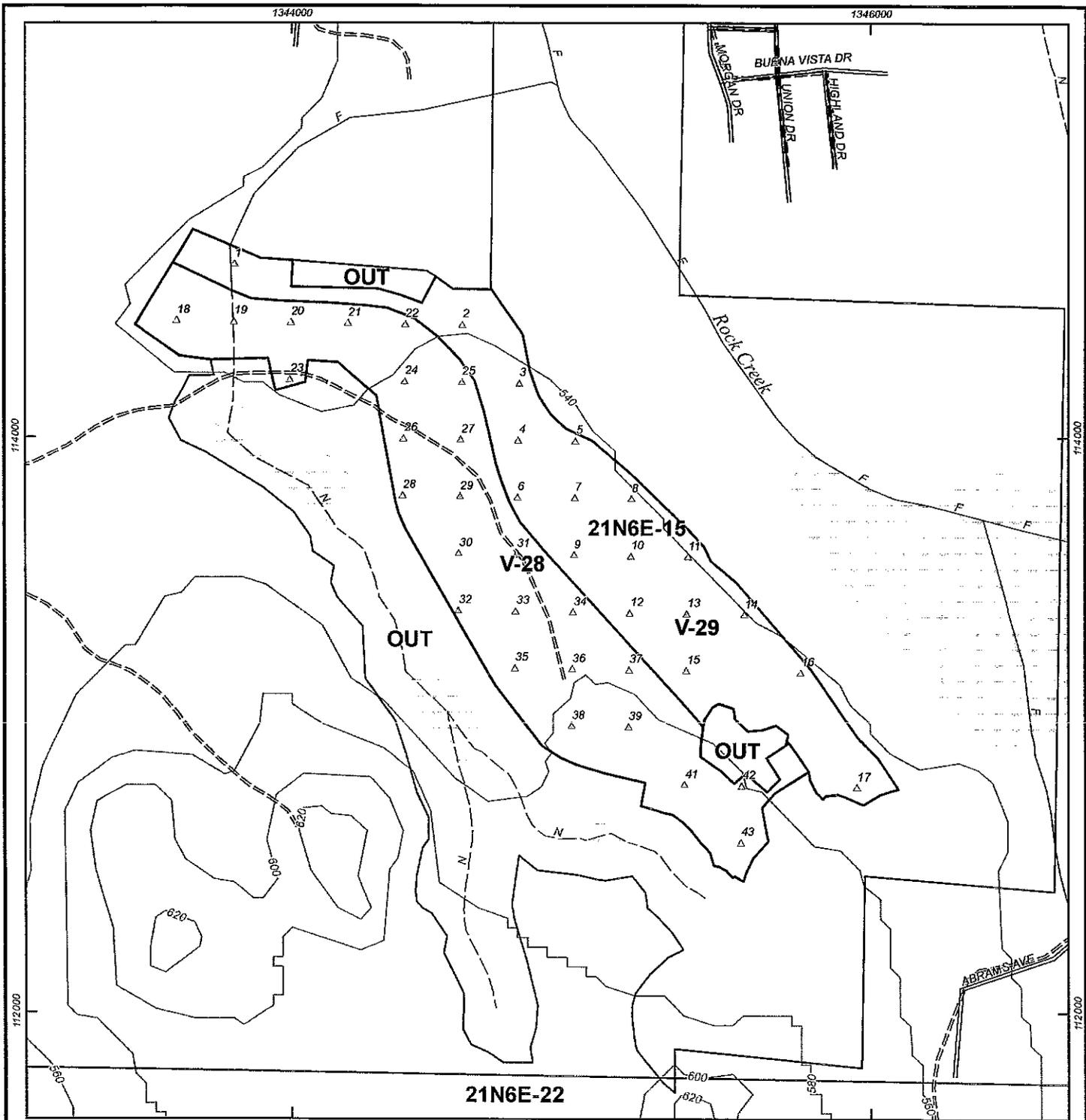
**Forester** | American Forest Management, Inc.

Tel: (425) 820-3420 | Email: [kelly.wilkinson@amforem.biz](mailto:kelly.wilkinson@amforem.biz)

Enclosures:

Orthophoto Plot Vicinity Map  
Orthophoto Plot Location Map  
Topography Plot Location Map

Superace Cruising Reports  
Stand Table Summary  
Type Statistics



△ Plot  
 [Shaded Box] V-28; V-29  
 [White Box] OUT  
 - - - 20' contour

Project boundaries are approximate  
 Coordinate system: WA State Plane, North, feet, NAD83

**Cruise Notes**

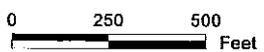
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Number of plots: \_\_\_\_\_ 3x3 ch grid



1 inch = 500 feet



American Forest Management, Inc.  
 Kirkland, WA 11/4/2013

**The Villages V-28 and V-29 Cruise Map**  
 Sec 15 - T 21 N, R 6 E, King County











**PROJECT STATISTICS**

Yarrow Bay

PROJECT V28 V29

DATE 11/4/2013

TWP	RGE	SC	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt
21N	06E	15	BD	V28	41.14	42	163	S	W
21N	06E	15	BD	V29					
CL	68.1		COEFF		NET CUFT FT/ACRE			# OF PLOTS REQ.	INF. POP.
SD:	1.00		VAR.	S.E.%	LOW	AVG	HIGH	5	10
WHEMLOCK									
R ALDER									
<b>TOTAL</b>									