

**SENSITIVE AREA STUDY**

FOR

**LAWSON HILLS**



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April 28, 2009  
Rev: July 21, 2009

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## SITE DESCRIPTION

*Wetland Resources, Inc.* (WRI) investigated the assemblage of properties known as “Lawson Hills” in between the months of March to October 2005 and October to December 2007 to identify, delineate, and evaluate jurisdictional wetlands. WRI revisited the site in March 2009 to verify wetland classifications based on the City of Black Diamond’s recently adopted Sensitive Areas Ordinance. The purpose of this report is to provide baseline information of existing on-site wetlands for a proposed Master Plan Development (MPD) of Lawson Hills.

The study area is located within the city limits of Black Diamond in southwest King County, Washington. It covers approximately 371.2 acres total, within portions of Sections 11-14, Township 21N, Range 6E, W.M. The Lawson Hills study area consists of two properties: the North Triangle and the Main Property.

### *North Triangle*

The North Triangle covers a total of approximately 54 acres of land. It is located at the northern edge of the Black Diamond city limits. An existing railroad grade runs north and south, crossing the western corner of the property. At the entrance to the site in the southeasterly corner is a gravel road that runs from east to west through the southern portion of the site. The road turns south and continues off-site to the south. There are numerous mountain bike trails throughout the site. The trails currently appear to be used recreationally for walking and biking.

The site is vegetated by an even-aged conifer forest in the southeasterly portion. The northwestern portion of the site appears to have been logged approximately 10 years ago. It is currently comprised of young Douglas fir plantings and dense scrub-shrub understory.

### *Main Property*

The Main Property is about one-quarter mile southeast of the North Triangle. Lawson Street divides the Main Property into areas referred to in this report as the “Northwest Area” and “Southeast Area”. The Northwest Area (~32 acres) extends easterly from Highway 169 (3<sup>rd</sup> Ave) to Lawson Street, toward the eastern edge of the Black Diamond city limits. The Southeast Area (~290 acres) occupies majority of the study area. The Southeast Area is bordered by Lawson Street to the north. It extends southward for approximately 0.8 miles, with Botts Drive traversing south and southeasterly through approximately the middle of the southeast area. Approximately 90-100 years ago, the Southeast Area was widely used for a coal mining operations.

Most of the site and surrounding land was converted to managed forest plantations several decades ago, and continues to be used for timber harvesting today. Land use to the west, toward the center of the city of Black Diamond, is comprised of mixed residential and commercial development.

### *Jones Lake*

In addition to the study area described above, WRI investigated an area near Jones Lake. The area is located southwest of the intersection of Highway 169 and Railroad Avenue at the Black Diamond Pump Station.

### *On-site Wetlands*

During WRI's field investigations, 22 wetlands were identified and delineated using the Corps of Engineers Wetland Delineations Manual (1987) and the Washington State Wetland Identification Manual (1997). The total acreage of wetland areas identified equates to 16.78 acres. Of this amount, there are a total of 0.35 acres of wetlands in the Northwestern Area, 13.76 acres of wetlands in the Southeastern Area, and 2.67 acres in North Triangle. The wetlands identified and described in this report vary in size, vegetation, hydrogeomorphic classes, and classification.

For a description of the on-site stream conditions, please refer to the Stream Assessment Report prepared by Cedar Rock Consulting (2008). This stream assessment was prepared for the Lawson Hills EIS.

### **PROPOSED DEVELOPMENT, IMPACTS AND CONCEPTUAL MITIGATION MEASURES**

The proposed Master Plan Development (MPD) for the entire 371.2 acres of land includes a mix of uses, such as residential, retail/commercial, office, educational, and recreational uses, and open space, as well as roads, utilities and stormwater facilities.

The proposed development plan would result in direct impacts to the on-site wetlands. Proposed road locations, storm water facilities and home sites will require permanent filling of certain wetlands on the site. Several of the wetlands proposed for permanent impact are isolated (closed depression) wetlands. The U.S. Army Corps of Engineers (Corps) ultimately makes the determination of whether these wetlands should be considered isolated. The Corps has previously determined that Wetlands S and T are isolated.

In addition to wetland fill, regulated buffers associated with the impacted wetlands will be permanently impacted. Buffer averaging is anticipated under the City of Black Diamond Critical Areas Ordinance. A proposal for buffer averaging will likely be included as part of the MPD application.

The majority of the wetlands areas proposed for permanent fill are relatively low functioning isolated features. Nevertheless, the overall cumulative effect of permanently impacting some of the wetlands and associated buffers will result in direct losses of natural hydrologic control, water quality improvement and wildlife habitat functions. Impacts are primarily a result of removing existing vegetation and increasing a considerable amount of impervious surfaces.

Compensatory mitigation measures will be provided through a combination of wetland creation wetland enhancement at a 4:1 mitigation ratio and buffer replacement at a 4:1 ratio. Additional details in a final mitigation plan will include, but will not be limited to, specific location of mitigation areas, proposed plant species and quantities, a detailed monitoring program, and associated performance bond.

#### **WETLAND CLASSIFICATIONS - COWARDIN SYSTEM**

The Cowardin System is a comprehensive wetland and deepwater habitat classification system that was developed for the U.S. Fish and Wildlife Service. It is recognized nationally as a standard system for classifying vegetation in wetlands.

There are several questions in the Department of Ecology (DOE) Wetland Rating Form for Western Washington that require classifying vegetation based on the Cowardin System. Therefore, in addition to classifying wetlands according the City of Black Diamond requirements, the wetlands on this site have been classified according to the Cowardin System. The Cowardin System is described in Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979). Classifications for the wetlands on this site are as follows:

#### **Wetlands A1, A2, A3, A6, A/B, K, MM, O, Q and R**

Palustrine, Forested Wetland, Broad-leaved Deciduous, Saturated

#### **Wetlands F, L, M, P, and T**

Palustrine, Forested Wetland, Broad-leaved Deciduous, Seasonally Flooded

#### **Wetland J and H**

Palustrine, Scrub-Shrub, Persistent, Seasonally Flooded

#### **Wetlands C, S, U, and V**

Palustrine, Emergent, Persistent, Seasonally Flooded

#### **Wetland W**

Palustrine, Emergent, Persistent, Seasonally Saturated

#### **WETLAND CLASSIFICATIONS - CITY OF BLACK DIAMOND**

In February 2009, the City of Black Diamond adopted an updated Sensitive Areas Ordinance, Chapter 19.10. According to the updated ordinance, wetlands are rated within the following categories: “Core Wetland and Stream Complex”, “Headwater Wetlands”, and “Other Wetlands”. Wetlands F, K, and O are Headwater wetlands. All other wetlands within the Lawson Main Property and the North Triangle are considered “Other Wetlands”, which means they will be classified according to the Washington State Wetland Rating System for Western Washington, revised August 2004 (Ecology Publication #04-06-025). Regulated buffers are determined using Black Diamond Sensitive Areas Ordinance, Chapter 19.10.230.

Because of the recent updates in the City's Sensitive Areas Ordinance, WRI recently revisited the site to verify wetland classifications and habitat scores according to the Department of Ecology (DOE) Wetland Rating Forms. The wetland classifications and regulated buffers for the wetlands identified on this are as follows.

**Wetlands A/B and F - Category II Wetland**

These wetlands receive scores between 51-69 points for functions on the DOE Wetland Rating Form, which equates to a Category II ratings. Wetland A/B will be dedicated a 75-foot protective buffer because it has a low habitat score of 11 points. Wetland F will be dedicated a 110-foot buffer because it has a moderate habitat score of 21 points.

**Wetlands A1, A2, A3, A6, H, J, K, L, M, MM, O, P, S, T, U, and V - Category III Wetlands**

These wetlands receive between 30-50 points for functions on the DOE Wetland Rating Form, which equate to Category III wetlands. None of these Category III wetlands has habitat scores greater than 20 points; therefore, they are all dedicated 60-foot protective buffers.

**Wetlands C, Q, R, and W - Category IV Wetlands**

These wetlands receive fewer than 30 points for functions on the DOE rating forms. Category IV wetlands in the city of Black Diamond typically receive 40-foot protective buffers.

**Main Property (Off-site) - Category II**

There is a large off-site wetland, east of the Main Property, located outside of the Black Diamond city limits. The wetland and its associated buffer are located almost entirely off-site, with the exception of a relatively small segment of buffer that encroaches into the Lawson Main property. Because the wetland is located entirely within the jurisdiction of King County, the applicant proposes to classify and dedicate buffers according to King County Critical Areas Ordinance, Chapter 21.A.24. Under this chapter, the large off-site wetland is a Category II wetland with a 150-foot buffer. It receives a total score of 67 points for functions, including a habitat score of 21 points.

**North Triangle (Off-site) - Category I**

There is a large off-site wetland, northwest of the North Triangle, within the jurisdiction of King County. It receives a total score of 73 points for functions, including a moderate habitat score of 27 points, on the DOE rating form. The wetland also meets the criteria of a bog because it is underlain by Orcas peat, which has formed in sphagnum moss. It is classified as a Category I wetland, and shall be dedicated a 215-foot buffer according to King County Critical Areas Ordinance, Chapter 21A.24. The boundary of this off-site wetland is approximate on the attached Sensitive Areas Map. The off-site wetland was not delineated or professionally surveyed in the field.

**Table 1: Wetland Information**

Wetland	Wetland Size Acres (Sq. ft.)	HGM Class	City of BD Classification	Total Score on DOE Rating Form	Habitat Score on DOE Rating Form	City of BD Minimum Buffer
A1	0.13 (5,551)	Depressional	Category III	35	17	60'
A2	1.63 (70,922)	Slope	Category III	35	15	60'
A3	0.86 (37,622)	Slope	Category III	35	15	60'
A6	0.05 (2,158)	Depressional	Category III	45	19	60'
A/B	0.24 (10,354)	Riverine	Category II	61	11	75'
C	0.12 (5,135)	Slope	Category IV	16	10	40'
F	3.5 (135,659)	Depressional	Category II	67	21	110'
H	0.71 (30,913)	Slope	Category III	38	18	60'
J	2.04 (89,004)	Depressional	Category III	32	12	60'
K	5.67 (246,848)	Slope	Category III	48	16	60'
L	0.21 (9,138)	Depressional	Category III	42	17	60'
M	0.19 (8,351)	Depressional	Category III	42	17	60'
Mm	0.97 (42,404)	Slope	Category III	31	19	60'
O	2.33 (101,642)	Slope	Category III	41	16	60'
P	0.06 (2,881)	Depressional	Category III	45	15	60'
Q	0.30 (13,102)	Slope	Category IV	21	16	40'
R	0.13 (5,519)	Slope	Category IV	23	13	40'
S	0.68 (29,680)	Depressional	Category III	43	13	60'
T	0.18 (7,949)	Depressional	Category III	41	11	60'
U	0.03 (1,474)	Depressional	Category III	38	8	60'

V	0.08 (3,504)	Depressional	Category III	38	8	60'
W	0.02 (1,055)	Slope	Category IV	15	11	40'
Off-site (Main Property)	>14.0 (>624,500)	Depressional	Category II	67	21	150' (per KKC)
Off-site (North Triangle)	>16.0	Depressional	Category I	72	27	215' (per KKC)

## WETLAND DETERMINATION REPORT

### Methodology

The routine methodology described in both the Corps of Engineers Wetland Delineations Manual (1987) and the Washington State Wetland Identification Manual (1997) was used for determining the presence of wetlands on the site. Under both of these methods, the process for making a wetland determination is based on three sequential steps:

1. Examination of the site for hydrophytic vegetation (species present and percent cover);
2. If hydrophytic vegetation is found, then the presence of hydric soils is determined.
3. The final step is determining if wetland hydrology exists in the area examined under the first two steps.

The following criteria descriptions were used in the boundary determination:

### Vegetation Criteria

The Corps of Engineers Wetland Delineations Manual (1987) and the Washington State Wetland Identification Manual (1997) define hydrophytic vegetation as the sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation, or soil saturation, produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present. One of the most common indicators for hydrophytic vegetation is when more than 50 percent of a plant community consists of species rated "Facultative" and wetter on lists of plant species that occur in wetlands.

### Soils Criteria and Mapped Description

The Corps of Engineers Wetland Delineations Manual (1987) and the Washington State Wetland Identification Manual (1997) define hydric soils as those that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. Field indicators are used for determining whether a given soil meets the definition for hydric soils.

## Hydrology Criteria

The Washington State Wetlands Identification and Delineation Manual (1997) edition, states that “areas which are seasonally inundated and/or saturated to the surface for a consecutive number of days  $\geq$ 12.5 percent of the growing season are wetlands, provided the soil and vegetation parameters are met. Areas inundated or saturated between 5 and 12.5 percent of the growing season in most years may or may not be wetlands. Areas saturated to the surface for less than 5 percent of the growing season are non-wetlands.” Field indicators are used for determining whether wetland hydrology parameters are met.

## Soil Conservation Service Maps

The USDA Natural Resources Conservation Service (NRCS) maps identify a total of three soil-mapping units within the boundaries of the study area. The soils underlying the site are mapped as Alderwood gravelly sandy loam, Everett gravelly sandy loam, and Beausite gravelly sand.

The Alderwood gravelly sandy loam unit is described as a moderately well drained soil on till plains. It is moderately deep over a hardpan. This soil formed in glacial till. Typically, the surface layer is very dark grayish brown gravelly sandy loam about 7 inches thick. The upper part of the subsoil is dark yellowish brown and dark brown very gravelly sandy loam about 23 inches thick. Included in this unit are small areas of Everett, Indianola, and Kitsap soils on terraces and uplands. Permeability of this soil is moderately rapid above the hardpan and very slow through the hardpan. Available water capacity is low. Soils sampled on site appear similar to the description for Alderwood gravelly sandy loam.

The Everett gravelly sandy loam unit is described as very deep, somewhat excessively drained soil on terraces and outwash plains. It formed in glacial outwash. Typically, the surface layer, where mixed to a depth of about 6 inches, is dark brown gravelly sandy loam. The subsoil is dark brown very gravelly sandy loam about 12 inches thick. Included in this unit are small areas of Alderwood soils on till plains, Indianola soils on terraces and outwash plains, and Ragnar soils on outwash plains. Included areas make up about 15 percent of the total acreage. Permeability of this Everett soil is rapid. Available water capacity is low.

The Beausite unit is made up of well-drained soils that are underlain by sandstone at a depth of 24-40 inches. Slopes are long and convex. The upper 2 inches are generally comprised of a mix of undecomposed and decomposed leaf litter. The surface layer (A horizon) ranges from very dark grayish brown to very dark brown and dark brown gravelly sandy loam. The subsoil (B horizon) ranges from dark grayish brown to dark yellowish brown and olive brown gravelly sandy loam. Predicted inclusions may be Alderwood, Ovall, Norma, and Seattle soils. Bellingham and Seattle soils are included on the Hydric Soils List for Washington.

The soils sampled throughout the study area are similar to the descriptions of the

Alderwood, Everett, and Beausite series.

#### REGULATED BUFFERS DISCUSSION

The regulated buffers for “Core” and “Headwater” wetlands are based on recommendations made by Parametrix in the document titled Best Available Science Review and Recommendations for Code Update (September 2008). In this document, wetland/stream complexes associated with Rock Creek, Jones Lake and Jones Creek corridor and the Black Diamond Lake/Stream corridors are recognized as having high functional values. These wetland/stream complexes, as a core, generally provide high levels of water supply, water quality improvement, and wildlife habitat. For this reason a recommended maximum 225 foot buffer for stream and wetlands within this core complex shall apply.

Wetland/stream complexes associated with headwaters of Ginder Creek, Lawson Creek, and Ravensdale Creek are also recognized as having high functional values. These wetland complexes contribute important surface and groundwater to the core complex. Buffer areas within 50 feet of the wetland protect water quality function, while buffers beyond 50 feet are primarily intended for protecting wildlife habitat. For headwaters, 225-foot buffers shall apply.

For all other wetlands, the city has adopted the recommended minimum buffer requirements under the Department of Ecology’s Guidance on Wetlands in Washington State (2005), Volume 2 - Protecting and Managing Wetlands, Appendix 8C (moderate intensity land use). The buffer widths in the Guidance are based on the wetland category, the intensity of the impacts, and the functions or special characteristics (i.e. habitat function) of the wetland that needs to be protected as determined through the rating system.

Based on the rationales described above and the requirements in Chapter 19.10 of the Black Diamond Sensitive Areas Ordinance, buffers for the on-site wetlands are recommended in the table below.

#### BOUNDARY DETERMINATION FINDINGS

##### Wetland Areas

The following is a list of dominant species identified within areas mapped as wetlands on this site: red alder (*Alnus rubra*, Fac), black cottonwood (*Populus balsamifera*, Fac), Sitka spruce, (*Picea sitchensis*, Fac), western red cedar (*Thuja plicata*, Fac), pacific willow (*Salix lucida*, FacW), Scouler’s willow (*Salix scouleriana*, Fac), Himalayan blackberry (*Rubus discolor*, FacU), Douglas spiraea (*Spiraea douglasii*, FacW) salmonberry (*Rubus spectabilis*, Fac+), vine maple (*Acer circinatum*, Fac-), red osier dogwood (*Cornus sericea*, FacW), skunk cabbage (*Lysitichon americanum*, Obl), bentgrass (*Agrostis spp.*, Fac - Fac+), creeping buttercup (*Ranunculus repens*, FacW), reed canarygrass (*Phalarus arundinacea*, FacW), soft rushes (*Juncus effusus*, FacW), and sedges (*Carex spp.*, Fac - Obl).

The soil colors observed within the on-site wetlands include black (10YR 2/1 and 2.5Y 2.5/1), very dark gray (10YR 3/1), gray (10YR 5/2), and very dark grayish brown (2.5Y 4/2, 10YR 3/2, 10YR 2/2) with mottles. Soil textures are typically gravelly silt loam, sandy clay loam, silt loam, and sandy loam. At the time of the site investigations, the soils were saturated within the upper 12 inches.

The dominance of species rated “Facultative” and wetter meets the criteria for hydrophytic vegetation in areas mapped as wetland. The presence of low chroma, saturated soils suggest that reducing conditions are present long enough during the growing season to develop anaerobic conditions in the upper part of the soil horizon. These characteristics meet the criteria for wetland soils. The areas mapped as wetland were saturated in the upper part at the time of the investigation, and appear to be seasonally inundated and/or saturated to the surface for a consecutive number of days  $\geq 12.5$  percent of the growing season, thereby fulfilling wetland hydrology criteria.

### Non-wetland

The following is a list of dominant species identified within areas mapped as non-wetland: Douglas fir (*Pseudotsuga menziesii*, FacU), western red cedar, western hemlock (*Tsuga heterophyllum*, FacU), red alder, bitter cherry (*Prunus emarginata*, FacU), big leaf maple (*Acer macrophyllum*, FacU), salmonberry, Himalayan blackberry, salal (*Gaultheria shallon*, FacU), red huckleberry (*Vaccinium parviflorum*, FacU), red elderberry (*Sambucus racemosa*, FacU), Oregon grape (*Berberis nervosa*, FacU) Himalayan blackberry, Scot’s broom (*Cytisus scoparius*, FacU), sword fern (*Polystichum munitum*, FacU), trailing blackberry (*Rubus ursinus*, FacU), bracken fern (*Pteridium aquilinum*, FacU), bentgrass, and tall fescue (*Festuca arundinacea*, FacU).

The soils underlying the areas mapped as non-wetlands on this site are typically dark brown (10YR 3/3) and dark yellowish brown (10YR 4/4, 10YR 5/4). No redoximorphic features were observed within the soil samples. The soils have a sandy loam and gravelly sandy loam texture. They were slightly moist during the site investigation. Based on these characteristics, wetland soils are not present within the areas mapped as non-wetland.

Based on the lack of field indicators, it appears that the non-wetland areas of the site are saturated to the surface for less than 12.5 percent of the growing season, thereby not fulfilling wetland hydrology criteria.

### WETLAND DESCRIPTIONS AND FUNCTIONS AND VALUES ANALYSIS

The following sections include general descriptions of wetland and upland conditions within the North Triangle, Northwest Area and Southeast Area, including vegetation communities, underlying soils, hydrologic conditions, and general functions offered within each of the identified wetlands.

## North Triangle

The North Triangle covers approximately 54 acres of land. Topography on the site is variable with a gradual northwest aspect in the southeastern portion and relatively flat areas in the northwestern portion. A steep northwest aspect divides the southeastern and northwestern portions of the site. There is also a small ridge with an access road along the northwesterly property line. An existing railroad grade runs north and south, crossing the western corner of the property. At the entrance to the site in the southeasterly corner is gravel drive that runs from east to west through the southern portion of the site. The road turns south and continues off-site to the south. In addition to these man-made features, there are numerous mountain bike trails throughout the site. The trails currently appear to be used recreationally for walking and biking.

The site is vegetated by an even-aged conifer forest in the southeasterly portion. The northwestern portion of the site appears to have been logged approximately 10 years ago. It is currently comprised of young Douglas fir plantings and dense scrub-shrub understory.

The North Triangle contains four wetlands identified as Wetland A1, A2, A3, and A6. These wetlands are all Category III wetlands with 60-foot buffers. WRI also identified a large wetland system located off-site to the north that is classified as a Category I wetland with a 215-foot buffer.

### *Wetland A1, A2 and A3*

Wetland A3 (0.86 acres) is located immediately south of the gravel trail within the southeastern corner of the site. Wetland A3 connects to Wetland A2 via a pipe under the existing gravel trail. Both Wetlands A2 and A3 are rated as Category III wetlands with scores of 35 on the DOE rating form. Wetland A2 drains into Wetland A1 (0.13 acres) via a small Type 5 stream. Wetland A1 is rated as a Category III wetland with a score of 35 on the DOE rating form. Wetland A1, A2 and A3 all have low habitat scores under 20 points. Dominant vegetation within these wetlands consists of red alder, Himalayan blackberry, salmonberry, and vine maple. The underlying soils are typically black 10YR 2/1 sandy loam. The soils were saturated to the surface at the time of the site investigation.

### *Wetland A6*

Wetland A6 (0.05 acres on-site) is a long and narrow depressional wetland located west of Wetlands A1-A3 within the southeastern corner of the site. This wetland occurs mostly off-site to the south. Vegetation and soils are similar to those within Wetlands A1-A3. Wetland A6 is rated as a Category III wetland with a score of 45 for functions, including a moderate habitat score of 19 points on the DOE rating form.

The wetlands on the North Triangle provide valuable water quality, stormwater control, and wildlife habitat functions, as evidenced by their scores on the DOE rating form. The wetlands are densely vegetated and have some ponding potential

to store floodwaters. The buffers contain good forest and shrub cover, but are disturbed with an extensive network of regularly used pedestrian and bike paths.

In addition to the wetlands identified on-site, a large Category I bog wetland was identified off-site to the northwest. This is a depression, scrub-shrub wetland with a forested and open water component. The wetland was not delineated or professionally surveyed in the field. Its approximate boundary is provided on the attached Sensitive Areas Map.

### **Northwest Area Wetlands**

The Northwest Area occupies approximately 32 acres of land extending from Highway 169 to Lawson Street. It is relatively flat within the eastern half, and then slopes relatively steeply to the west toward Highway 169. The Northwest Area contains a long and narrow section that is oriented toward the east and west. The western portion of the site along Highway 169 is wider and shaped like a hammerhead. It is bordered by undeveloped vacant land to the north, and residential development to the west, south, and east.

The area is comprised of a mix of cleared and forested areas. Existing man-made features on the site include one single-family residence within the southeastern portion, as well as access roads joining this site to the parcel to the north.

The western half of the site is comprised of mixed deciduous forest and Himalayan blackberry vegetative communities. Dominant species in the canopy include big leaf maple and red alder, with some Douglas fir, black cottonwood, western red cedar, and western hemlock. The understory consists of salmonberry, stinging nettle, sword fern, trailing blackberry, bracken fern, Himalayan blackberry, red elderberry, vine maple, and Oregon grape.

The eastern half of the site is partially forested and partially cleared pastureland. The forested areas are comprised of immature Douglas fir trees, with some red alder, bitter cherry, and big leaf maple. The understory consists of salmonberry, sword fern, trailing blackberry, bracken fern, and Himalayan blackberry. The cleared areas contain bentgrass, reed canarygrass, rush, sedge, fescue, Himalayan blackberry, and a few scattered red alder.

WRI identified three wetlands in the Northwest Area totaling 0.35 acres. The wetlands are labeled as Wetlands A/B, U, and V.

#### *Wetland A/B*

Wetland A/B (0.24 acres) is a riverine wetland located within the southwestern portion. Wetland A/B is dominated by black cottonwood, red alder, Himalayan blackberry, salmonberry, and skunk cabbage. The soils underlying this wetland are typically black 10YR 2/1 gravelly silt loam, and were saturated to the surface at the time of the investigation. The wetland is relatively narrow and located on a slope within a ravine. Water flows through the wetland in a northwesterly direction.

Wetland hydrology appears to be influenced primarily by over bank flooding. Wetland hydrology at the terminus of this wetland appears to infiltrate. Wetland A/B is a riverine wetland that receives high scores for water quality and hydrologic functions on the DOE rating forms. Wetland A/B receives a total score of 61 for functions on the DOE Wetland Rating Form, including a habitat score of 11. This equates to a Category II wetland with 75-foot buffers. Developed and historically degraded areas adjacent to this wetland result in a moderately low score for habitat functions.

#### *Wetlands U and V*

Wetlands U (0.03 acres) and V (0.08 acres) are small depressional wetlands located within the eastern portion of this area of the site. The wetlands are located within the pasture areas of this site, and are dominated by emergent species, including soft rush, bent grass, creeping butter cup, and small willows. The soils underlying this wetland are dark grayish black 10YR 3/1 gravelly silt loam, and were saturated to the surface at the time of the investigation. Wetlands U and V both receive scores of 38 for functions on the DOE Wetland Rating Forms. These scores equate to a Category III classification. With habitat scores under 20 points, these wetlands will be dedicated 60-foot buffers. Wetlands U and V are isolated, but the final determination of their isolation will be made by COE. These wetlands are severely limited in providing higher levels of functions and values due to their relatively small sizes, shallow topography, lack of significant vegetation cover, and lack of connection to other systems.

#### **Southeast Area Wetlands**

The irregularly shaped Southeast Area occupies approximately 290 acres of land that extends southerly from Lawson Street for approximately 0.8 miles, with Botts Drive traversing south and southeasterly through approximately the middle of the southeast area. The topography generally increases in elevation from west to east throughout the site. There are flat areas adjacent to both Lawson Street and Botts Drive SE where there are several single-family residences on-site. Most of the site has been used for timber harvesting. There are numerous gravel access roads throughout the site. The northernmost quarter of this area is forested with immature Douglas fir trees, with some red alder, bitter cherry, and big leaf maple. The understory consists of salmonberry, sword fern, trailing blackberry, bracken fern, and Himalayan blackberry. The area from the intersection of Lawson Street and Botts Drive to the eastern boundary of the study area contains the flatter topography, with some large-lot single-family residences and pastureland, vegetation predominantly consists of bentgrass, reed canarygrass, rush, sedge, fescue, Himalayan blackberry thickets, and a scattered red alder. The remainder of the site to the south is similar to that of the northern quarter of the site. Other vegetative species found within the on-site forested areas include black cottonwood, western hemlock, western red cedar, pacific willow, salal, red huckleberry, red elderberry, cut-leaf blackberry, Oregon grape, and Douglas spiraea.

There are 16 wetlands of varying sizes, quality, and categories, within the Southeast Area, and one large wetland off-site to the east. The wetlands are labeled as Wetlands C, F, H, J, K, L, M, MM, P, O, Q, R, T, S and W. The descriptions of these wetlands are provided below.

#### *Wetland C*

Wetland C (0.12 acres) is located on a relatively steep slope within the northern portion of the Southeastern Area. This wetland and its associated buffer are surrounded by open pastureland and single-family residences. Vegetation within Wetland C and its buffer are currently maintained as pasture grasses. Water flows through this wetland in a northwesterly direction and eventually outlets into a roadside ditch. This wetland receives a total score of 16 points for functions on the DOE Rating Form, including a habitat score of 10. This equates to a Category IV classification with a 40 foot regulated buffer. The relatively low rating score appears to be a function of the disturbed nature of the wetland and its buffer, and lack of vertical structure, vegetative and habitat diversity.

#### *Wetland F*

Wetland F (3.5 acres) lies mainly off-site to the east. While this wetland occurs adjacent to Lawson Creek, it is not a headwater wetland because its source of hydrology is supplied by a much larger wetland system to the east. This wetland is dominated by western hemlock, red alder, pacific willow, salmonberry, Himalayan blackberry, reed canarygrass, and yellow skunk cabbage. The soils underlying this wetland are typically brown (10YR 3/2) silt loam and sandy loam with redoximorphic features within the upper 18 inches of the surface. The soils were saturated at the time of the field investigation. Wetland F is a Category II wetland with a score of 67 points for functions, including a habitat score of 21. It will be dedicated a 110-foot buffer. This wetland is relatively large, covered by dense woody species, and moderate high habitat diversity and the ability to store large volumes of stormwater.

#### *Wetland H*

Wetland H (0.71 acres) is located along the slope east of Wetland C. This wetland is located within the transitional area between the open pasture areas of the site and the more densely forested areas to the north. Wetland H is located on a relatively steep slope with water flowing from large seeps in its eastern portion in a westerly direction. Dominant vegetation consists of immature red alder with Himalayan blackberry in the understory. The soils underlying this wetland are typically very dark gray (10YR 3/1) to very dark grayish brown (10YR 3/2) gravelly silt loam within the upper 18 inches. Based on its location on a slope, and limited vegetation diversity and density, the wetland receives a total score of 38 points for functions, with a low habitat score of 18 points. This equates to a Category III wetland with 60-foot buffers on this site.

### *Wetland J*

Wetland J (2.04 acres) is located along the eastern side of Botts Road, directly east of Wetland S and T. This wetland is on a moderate slope within an area comprised of mixed forest and pasture areas. The area surrounding these wetlands is predominantly comprised of flat pastures and single-family residences. Typical species within this wetland include red alder, salmonberry, Himalayan blackberry, Scouler's willow, and creeping buttercup. The soils underlying this wetland are typically dark grayish brown (2.5Y 4/2) with redoximorphic features within the upper 12 inches. The soils have a silt loam texture. It was ponded at the surface during our site investigation.

This wetland receives a total score of 32 points for functions, including a low habitat score of 12 points. This equates to a Category III wetland with 60-foot buffers. Its outlet is a roadside ditch. While the wetland does contain dense persistent ungrazed vegetation, it lacks depressional features that would typically allow for stormwater storage and hydrologic improvement functions. Nearby developed areas and lack of viable buffer result in moderately low wildlife habitat potential.

### *Wetland K*

Wetland K (5.67 acres) is a slope wetland dominated by Sitka spruce, red alder, willows, red-osier dogwood, salmonberry, Himalayan blackberry, and reed canarygrass, sword fern, and lady fern, Scouler's willow, Douglas spirea, red-osier dogwood, slough sedge, and skunk cabbage. Underlying soils within the upper 12 inches are variable and include Munsell colors of black (2.5Y 2.5/1) dark grayish brown (2.5Y 4/2) and very dark grayish brown (10YR 2/2). The soils have a texture of silt loam. They were saturated to the surface at the time of the site investigation.

Wetland K is located on a gradual slope with water generally flowing southerly into Lawson Creek. The wetland is not a headwater wetland because it is not located at the upper part of the drainage system and is not classified as depressional. It has moderate potential for storing and treating stormwater and providing habitat functions. Wetland K receives a total score of 48 points, including a habitat score of 16, on the DOE rating form. This equates to a Category III rating with 60-foot buffers.

### *Wetlands L and M*

Wetlands L (0.21 acres) and M (0.19 acres) are in the southeastern portion of the site. Both of these wetlands are typically comprised of red alder, western red cedar, salmonberry, willows, black cottonwood, sedges and skunk cabbage in the understory. Underlying soils are typically dark grayish brown (10YR 3/2) sandy loam within the upper 18 inches of the surface. Wetlands L and M are isolated, but the final determination of their isolation will be made by COE. Both Wetlands L and M provide valuable hydrologic control, water quality, and wildlife habitat functions to the surround areas. Wetland L receives a score of 44 points, while Wetland M

receives a score of 42 points for functions on the DOE rating form. Both wetlands have habitat scores of 17 points. These scores equate to a Category III ratings with 60-foot buffers.

#### *Wetland MM*

Wetland MM (0.97 acres) is located adjacent to an on-site Type Np stream along the western property boundary. Typical vegetation within Wetland MM consists of immature red alder and traces of pacific willow in the canopy with Himalayan blackberry and reed canarygrass in the understory. Underlying soils within Wetland MM are very dark gray (10YR 3/1) clay loam 18 inches thick. They were saturated to the surface at the time of the investigation. This wetland receives a total score of 31 points for functions, including a habitat score of 19 points, on the DOE Rating Form. This equates to a Category III rating with 60-foot buffers. Because of existing slopes, limited woody vegetation cover and limited depressional areas, Wetland MM receives low scores of 6 each for hydrologic control and water quality functions. Wetland MM receives a score of 19 for habitat functions because of the presence of numerous habitat features, and location within a relatively large undisturbed corridor.

#### *Wetland O*

Wetland O (2.33 acres) a forested depressional wetland located between the main access road and the south side of Lawson Creek. The wetland is dominated by red alder, salmonberry, Himalayan blackberry, reed canarygrass, and lady fern. Underlying soils within this wetland consists of black (10YR 2/1) sandy loam and dark grayish brown (10YR 3/2) sandy loam within the upper 16 inches. The soils were saturated to the surface at the time of the site visit. Wetland O receives a total score of 40 points for functions, including a habitat score of 16 points, on the DOE rating form. It will be classified as a Category III wetland with a 60-foot buffer. It is a densely vegetated with moderate potential for providing hydrologic control and water quality functions.

#### *Wetland P*

Wetland P (0.06 acres) is a forested depressional wetland located within the southeastern portion of the site adjacent to the east side of the existing logging road and existing cell towers. It is forested with immature red alder and salmonberry in the understory. The underlying soils are typically 10YR 5/2 sandy clay loam with strong redoximorphic features about 12 inches thick. Wetland P functions to provide valuable hydrologic control, water quality, and wildlife habitat functions to the surrounding areas, thereby receiving a score of 45 points for functions on the DOE rating form. A score of 45 equates to a Category III rating. With a habitat score of 15 points, it is dedicated a 60-foot buffer. Wetland P is isolated, but the final determination of its isolation will be made by COE.

#### *Wetland Q*

Wetland Q (0.30 acres) is a highly degraded wetland located on a slope just west of the on-site water tower. The wetland is degraded by a logging road that runs

through approximately the center of it. Water flows from seeps in a westerly direction and infiltrates at the terminus of the wetland. Dominant vegetation within Wetland Q consists of immature red alder, black cottonwood, Himalayan blackberry, salmonberry and reed canarygrass. Underlying soils are typically dark grayish brown (10YR 3/2) sandy clay loam with redoximorphic features within the upper 18 inches. Vegetation has been disturbed over the years to maintain use of the existing logging road. This wetland receives a total score of 20 points for functions, which equates to a Category IV wetland with 40-foot buffers. The degraded nature of this wetland contributes to the limitations it has with providing higher levels of water quality and hydrologic control functions. Wetland Q is isolated, but the final determination of their isolation will be made by COE.

#### *Wetland R*

Wetland R (0.13 acres) is a slope wetland located along the north side of Lawson Creek. It is fed by seeps, with water moving in a southerly direction to Lawson Creek. Dominant vegetation consists of red alder, Himalayan blackberry and salmonberry. Underlying soils are typically dark grayish brown (10YR 3/2) sandy loam with redoximorphic features within the upper 18 inches. Wetland R receives a total score of 23 points on the DOE rating form, which equates to a Category IV wetland with 40-foot buffers. This wetland has limited potential in providing typical wetland functions, such as water quality and hydrologic control, because of its location on a slope, inability to store large volumes of stormwater, and lack of woody species cover.

#### *Wetlands S and T*

Wetlands S (0.69 acres) and T (0.18 acres) are pasture wetlands located between Botts Drive and Lawson Street in the western part. The area surrounding these wetlands is predominantly comprised of flat pastures and single-family residences. Typical vegetation within Wetland T includes soft rush, and bentgrass, with some Himalayan blackberry and cut-leaf blackberry. The soils underlying this wetland are typically dark gray 10YR 3/1 to dark grayish brown (10YR 4/2) sandy loam with redoximorphic features within the upper 18 inches. Typical vegetation within Wetland S includes soft rush, reed canary grass, and bentgrass, with some Himalayan blackberry and cut-leaf blackberry. The soils underlying this wetland are typically dark gray (10YR 3/1) sandy loam within the upper 18 inches. Wetland S receives a total score of 43 point for functions on the DOE Wetland Rating Form for Western Washington, while Wetland T receives a score of 41. Both Wetlands S and T have low habitat scores under 20 points. These wetlands are severely limited in providing higher levels of functions and values due to their relatively small sizes, shallow topography and lack of significant vegetation cover. Surrounding developed and historically degraded pasture areas result in moderately low habitat functions within these wetlands. Wetlands T and S are isolated wetlands, which was confirmed by COE. These wetlands are classified as Category III wetlands with 60-foot buffers.

### *Wetland W*

Wetland W (0.02 acres) is a highly degraded slope wetland dominated by emergent species. Vegetation within this wetland consists of reed canarygrass and soft rush. Underlying soils are typically black (10YR 2/1) sandy loam and very dark gray (10YR 3/1) sandy clay loam within the upper 18 inches. This wetland receives a total score of 15 points for functions on the DOE Rating Form. This equates to a Category IV wetland with 40-foot buffers. The low value of functions within this wetland is largely due to the wetland's lack of wood species cover, ability to retain large volumes of stormwater, and lack of habitat diversity. Due to Wetland W's proximity to Lawson Creek it will likely not be determined an isolated wetland by the COE.

### *Off-site Category II Wetland*

There is a large off-site (~14 acres) wetland, east of the Main Property, located outside of the Black Diamond city limits. This wetland is dominated by western hemlock, red alder, pacific willow, salmonberry, Himalayan blackberry, reed canarygrass, and yellow skunk cabbage. The soils underlying this wetland are typically brown (10YR 3/2) silt loam and sandy loam with redoximorphic features within the upper 18 inches of the surface. The soils were saturated at the time of the field investigation. The wetland is a Category II wetland with a score of 67 points for functions, including a habitat score of 21.

The wetland and its associated buffer are located almost entirely off-site, with the exception of a relatively small segment of buffer that encroaches into the Lawson Main property. Because the wetland is located entirely within the jurisdiction of King County, the applicant proposes to classify and dedicate buffers according to King County Critical Areas Ordinance, Chapter 21.A.24. Under this chapter, the wetland is a Category II wetland with a 150-foot buffer.

### **Jones Lake Wetland**

In addition to the Main Lawson site and North Triangle described above, WRI investigated a portion of the Jones Lake wetland area adjacent to Jones Lake, located southwest of the intersection of Railroad Avenue and Highway 169. The purpose of the investigation was to determine whether the area meets the criteria of a sphagnum bog system, with respect to placement of a proposed sanitary sewer line that will serve the proposed development. Sphagnum-dominated bogs are acidic bogs where the ground layer is predominantly covered by dense mats of sphagnum moss.

The area investigated is mapped by the NRCS as Seattle Muck. The Seattle Muck soil series is described as very poorly drained organic soils that formed primarily in sedges. The soils investigated within the Jones Lake wetland area match this description.

Based on these existing conditions, the investigated area does not meet the criteria of a sphagnum bog. Temporary impacts for placement of utilities in the area should be allowed.

## WILDLIFE

The study area contains a wide range of habitat types and features spread over a large area. The types of habitats found on the site include: open water, wetland - meadow, forested wetland, coniferous forest, deciduous forest, shrub/sapling, grass/forb and residential

Because of the variety of habitats and features wildlife use is extensive throughout the study area, a variety of avian, mammalian, reptilian, and amphibious species are expected to utilize these habitats. The list of species below is not intended to be all-inclusive, and may omit some bird, mammal, or amphibian species that utilize the site.

### Species observed or detected on or in the vicinity of the study area:

Pacific Tree Frog (*Pseudacris regilla*), red-tailed hawk (*Buteo jamaicensis*), California quail (*Callipepla californica*), downy woodpecker (*Picoides pubescens*), northern flicker (*Colaptes auratus*), pileated woodpecker (*Dryocopus pileatus*), steller's jay (*Cyanocitta stelleri*), American crow (*Corvus brachyrhynchos*), common raven (*Corvus corax*), black-capped chickadee (*Poecile atricapilla*), brown creeper (*Certhia americana*), winter wren (*Troglodytes troglodytes*), golden-crowned kinglet (*Regulus satrapa*), American robin (*Turdus migratorius*), spotted towhee (*Pipilo maculatus*), song sparrow (*Melospiza melodia*), dark-eyed junco (*Junco hyemalis*), Virginia opossums (*Didelphis virginiana*), Townsend's Mole (*Scapanus townsendii*), Snowshoe Hare (*Lepus americanus*), eastern cottontail (*Sylvilagus floridanus*), mountain beaver (*Aplodontia rufa*), Douglas' squirrel (*Tamiasciurus douglasii*), Eastern gray squirrel (*Sciurus carolinensis*), deer mouse (*Peromyscus maniculatus*), black bear (*Ursus americanus*), raccoons (*Procyon lotor*), coyotes (*Canis latrans*), bobcat (*Lynx rufus*), elk (*Cervus elaphus*), and black-tailed deer (*Odocoileus hemionus columbianus*),

No endangered, threatened, or sensitive plants species are known or likely to occur on-site. No Federal or State listed endangered, threatened, or sensitive plants species were found during field surveys.

#### USE OF THIS REPORT

This Sensitive Area Study is supplied to Black Diamond Properties, LP as a means of determining on-site sensitive area conditions, as required by the City of Black Diamond during the permitting process. 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.*



Andrea Bachman  
*Senior Wetland Ecologist*

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Field Data

Lawson Hills (Main Property and Parcel A)

Investigation Dates: March - Oct 2005 and Oct - Dec 2007

Pit	Depth	Texture	Color	Moisture	Species	%	Status	Strata
S1 Wetland	0-18"	Gravelly Silt Loam	10YR 2/1	sat	<i>Populus balsamifera</i>	5	Fac	Tree
					<i>Alnus rubra</i>	5	Fac	Tree
					<i>Rubus armeniacus</i>	50	FacU	Shrub
					<i>Rubus spectabilis</i>	10	Fac+	Shrub
					<i>Lysichiton americanum</i>	10	Obl	Shrub

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

S2 Non-Wetland	0-18"	Gravelly Sandy Loam	10YR 3/3	sl. moist	<i>Prunus emarginata</i>	10	FacU	Tree
					<i>Alnus rubra</i>	5	Fac	Tree
					<i>Pseudotsuga menziesii</i>	5	FacU	Tree
					<i>Rubus armeniacus</i>	45	FacU	Shrub
					<i>Oemleria cerasiformis</i>	15	FacU	Shrub
					<i>Rubus spectabilis</i>	10	Fac+	Shrub
					<i>Ilex aquifolium</i>	5	FacU	Shrub
					<i>Polystichum munitum</i>	10	FacU	Herb
<i>Hedera helix</i>	20	FacU	Herb					

Conclusion: Non-Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are not met.

S3 Wetland	0-12"	Silt Loam	2.5Y 4/2 with redox	sat	<i>Corylus cornuta</i>	10	FacW	Shrub
					<i>Rubus laciniatus</i>	5	FacW+	Shrub
					<i>Salix scouleriana</i>	5	Fac	Shrub
					<i>Rubus spectabilis</i>	45	FacU	Shrub
					<i>Phalaris arundinacea</i>	15	FacW	Herb

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

S4 Wetland	0-12"	Silt Loam	2.5Y 4/2 with redox	sat	<i>Salix scouleriana</i>	20	Fac	Tree
					<i>Alnus rubra</i>	15	Fac	Tree
					<i>Rubus armeniacus</i>	40	FacU	Shrub
					<i>Rubus spectabilis</i>	20	Fac+	Shrub
					<i>Ranunculus repens</i>	15	FacW	Herb

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

S5 Non-Wetland	0-4"	Gravelly Sandy Loam	10YR 4/4	moist	<i>Alnus rubra</i>	10	Fac	Tree
	4-18"		10YR 5/4		<i>Rubus armeniacus</i>	10	FacU	Shrub
	<i>Rubus laciniatus</i>		5		FacU+	Shrub		
	<i>Agrostis tenuis</i>		60		Fac	Herb		
	<i>Ranunculus repens</i>		5		FacW	Herb		
<i>Taraxacum officinale</i>	5	FacU	Herb					

Conclusion: Non-Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are not met.

Field Data

Lawson Hills (Main Property and Parcel A)

Investigation Dates: March - Oct 2005 and Oct - Dec 2007

S6	0-6"	Gravelly Sandy Loam	10YR 3/2	moist	<i>Alnus rubra</i>	5	Fac	Tree
Wetland	6-18"	Gravelly Sandy Loam	10YR 3/2	sat	<i>Rubus armeniacus</i>	10	FacU	Shrub
					<i>Rubus laciniatus</i>	5	FacU+	Shrub
					<i>Agrostis tenuis</i>	60	Fac	Herb
					<i>Festuca arundinacea</i>	10	FacU	Herb
					<i>Juncus effusus</i>	5	FacW	Herb
					<i>Taraxacum officinale</i>	5	FacU	Herb

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

S7	0-18"	Silt Loam	10YR 2/2	sat	<i>Picea sitchensis</i>	15	Fac	Tree
Wetland			with redox		<i>Alnus rubra</i>	5	Fac	Tree
					<i>Salix sp.</i>	5	Fac-FacW	Tree
					<i>Cornus sericea</i>	5	FacW	Shrub
					<i>Rubus spectabilis</i>	5	Fac+	Shrub
					<i>Rubus armeniacus</i>	5	FacU	Shrub
					<i>Phalaris arundinacea</i>	30	FacW	Herb
					<i>Polystichum munitum</i>	5	FacU	Herb
					<i>Athyrium filix-femina</i>	5	Fac+	Herb

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

S8	0-6"	Silt Loam	2.5Y 2.5/1	sat	<i>Salix scouleriana</i>	15	FacW	Shrub
Wetland	6-12"	Silt Loam	2.5Y 4/2	sat	<i>Spiraea douglasii</i>	15	FacW	Shrub
			with redox		<i>Cornus sericea</i>	10	FacW	Shrub
					<i>Rubus armeniacus</i>	10	FacU	Shrub
					<i>Carex obnupta</i>	30	Obl	Herb
					<i>Lysichiton americanum</i>	5	Obl	Herb

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

S9	0-6"	Silt Loam	2.5Y 2.5/1	sat	<i>Picea sitchensis</i>	10	Fac	Tree
Wetland	6-12"	Silt Loam	2.5Y 4/2	sat	<i>Salix sp.</i>	15	Fac-FacW	Shrub
			with redox		<i>Carex sp.</i>	10	Fac-Obl	Herb

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

Field Data

Lawson Hills (Main Property and Parcel A)

Investigation Dates: March - Oct 2005 and Oct - Dec 2007

S10	0-18"	Silt Loam	10YR 2/1	sat	<i>Alnus rubra</i>	10	Fac	Tree
Wetland					<i>Salix sp.</i>	10	Fac-FacW	Tree
					<i>Rubus armeniacus</i>	15	FacU	Shrub
					<i>Rubus spectabilis</i>	10	Fac+	Shrub
					<i>Rubus laciniatus</i>	5	FacU	Shrub
					<i>Phalaris arundinacea</i>	30	FacW	Herb
					<i>Lysichiton americanum</i>	5	Obl	Herb
					<i>Ranunculus repens</i>	5	FacW	Herb
					<i>Juncus effusus</i>	5	FacW	Herb

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

S11	0-10"	Silt Loam	10YR 3/2	sat	<i>Tsuga heterophylla</i>	30	FacU	Tree
Wetland	10-18"	Sandy Loam	10YR 3/2	sat	<i>Alnus rubra</i>	10	Fac	Tree
			with redox		<i>Salix sp.</i>	10	Fac-FacW	Tree
					<i>Salix lucida</i>	10	FacW	Tree
					<i>Rubus armeniacus</i>	20	FacU	Shrub
					<i>Rubus spectabilis</i>	10	Fac+	Shrub
					<i>Phalaris arundinacea</i>	5	FacW	Herb
					<i>Lysichiton americanum</i>	5	Obl	Herb

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

S12	0-6"	Silt Loam	2.5Y 2.5/1	sat	<i>Salix scouleriana</i>	15	FacW	Shrub
Wetland	6-12"	Silt Loam	2.5Y 4/2	sat	<i>Spiraea douglasii</i>	15	FacW	Shrub
			with redox		<i>Cornus sericea</i>	10	FacW	Shrub
					<i>Rubus armeniacus</i>	10	FacU	Shrub
					<i>Carex obnupta</i>	30	Obl	Herb
					<i>Lysichiton americanum</i>	5	Obl	Herb

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

S13	0-18"	Gravelly Sandy Loam	10YR 3/3	dry	<i>Abies procera</i>	20	FacU-	Tree
Non-Wetland					<i>Alnus rubra</i>	10	Fac	Tree
					<i>Populus balsamifera</i>	5	Fac	Tree
					<i>Rubus armeniacus</i>	60	FacU	Shrub
					<i>Rubus spectabilis</i>	10	Fac+	Shrub
					<i>Digitalis purpurea</i>	10	FacU	Herb
					<i>Ranunculus repens</i>	10	FacW	Herb
					<i>Dicentra formosa</i>	10	FacU	Herb
					<i>Tellima grandiflora</i>	5	N.I.	Herb

Conclusion: Upland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are not met.

Field Data

Lawson Hills (Main Property and Parcel A)

Investigation Dates: March - Oct 2005 and Oct - Dec 2007

S14	0-18"	Gravelly Sandy Loam	10YR 3/3	moist	<i>Thuja plicata</i>	15	Fac	Tree
Non-Wetland					<i>Rubus armeniacus</i>	14	FacU	Shrub

Conclusion: Upland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are not met.

S15	0-6"	Sandy Loam	10YR 3/1	sat	<i>Juncus effusus</i>	45	FacW	Herb
Wetland	6-18"	Gravelly Sandy Loam	5Y 5/2	sat	<i>Equisetum sp.</i>	25	Obl-FacW	Herb
					<i>Phalaris arundinacea</i>	15	FacW	Herb
					<i>Ranunculus repens</i>	15	FacW	Herb
					<i>Agrostis tenuis</i>	10	Fac	Herb

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

S16	0-18"	Sandy Loam	10YR 4/4	moist	<i>Alnus rubra</i>	10	Fac	Tree
Non-Wetland					<i>Populus balsamifera</i>	10	Fac	Tree
					<i>Salix sp.</i>	5	Fac-FacW	Tree
					<i>Rubus armeniacus</i>	25	FacU	Shrub
					<i>Rubus spectabilis</i>	15	Fac+	Shrub
					<i>Crataegus douglasii</i>	10	Fac	Shrub

Conclusion: Upland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are not met.

S17	0-12"	Silt Loam	10YR 3/3	moist	<i>Holcus lanatus</i>	45	Fac	Herb
Non-Wetland	12-18"	Silt Loam	10YR 5/3	moist	<i>Dactylis glomerata</i>	25	FacU	Herb
					<i>Agrostis tenuis</i>	25	Fac	Herb
					<i>Taraxacum officinale</i>	10	FacU	Herb

Conclusion: Upland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are not met.

S18	0-12"	Sandy Loam	10YR 5/2	sat	<i>Alnus rubra</i>	10	Fac	Tree
Wetland					<i>Rubus spectabilis</i>	85	Fac+	Shrub

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

S19	0-3"	Silt Loam	10YR 2/1	sat	<i>Alnus rubra</i>	15	Fac	Tree
Wetland	3-16"	Silt Loam	10YR 3/2	sat	<i>Rubus spectabilis</i>	45	Fac+	Shrub
					<i>Rubus armeniacus</i>	15	FacU	Shrub
					<i>Phalaris arundinacea</i>	35	FacW	Herb
					<i>Athyrium filix-femina</i>	10	Fac+	Herb

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

## Field Data

### Lawson Hills (Main Property and Parcel A)

Investigation Dates: March - Oct 2005 and Oct - Dec 2007

S20	0-3"	Sandy Loam	10YR 3/2	moist	<i>Pseudotsuga menziesii</i>	45	FacU	Tree
Non-Wetland	3-18"	Sandy Loam	10YR 3/3	moist	<i>Populus balsamifera</i>	30	Fac	Tree
					<i>Alnus rubra</i>	15	Fac	Tree
					<i>Prunus emarginata</i>	5	FacU	Tree
					<i>Rubus spectabilis</i>	25	Fac+	Shrub
					<i>Sambucus racemosa</i>	10	FacU	Shrub
					<i>Rubus armeniacus</i>	10	FacU	Shrub
					<i>Rubus ursinus</i>	25	FacU	Herb

Conclusion: Non-Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are not met.

S21	0-18"	Sandy Loam	10YR 3/2	sat	<i>Alnus rubra</i>	25	Fac	Tree
Wetland					<i>Rubus armeniacus</i>	55	FacU	Shrub
					<i>Rubus spectabilis</i>	25	Fac+	Shrub
					<i>Phalaris arundinacea</i>	75	FacW	Herb

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

S22	0-4"	Sandy Loam	10YR 3/1	sat	<i>Rubus armeniacus</i>	10	FacU	Shrub
Wetland	4-18"	Sandy Loam	10YR 3/2	sat	<i>Rubus laciniatus</i>	10	FacU+	Woody Vine
			w/motts		<i>Juncus effusus</i>	85	FacW	Herb
					<i>Agrostis sp.</i>	15	Fac-FacW	Herb

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

S23	0-18"	Sandy Loam	10YR 3/1	sat	<i>Rubus armeniacus</i>	10	FacU	Shrub
Wetland					<i>Rubus laciniatus</i>	10	FacU+	Woody Vine
					<i>Juncus effusus</i>	85	FacW	Herb
					<i>Phalaris arundinacea</i>	75	FacW	Herb
					<i>Agrostis sp.</i>	15	Fac-FacW	Herb

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

S24	0-18"	Sandy Loam	10YR 3/1	sat	<i>Salix sp.</i>	5	Fac-FacW	Tree
Wetland					<i>Juncus effusus</i>	80	FacW	Herb
					<i>Agrostis sp.</i>	5	Fac-FacW	Herb
					<i>Ranunculus repens</i>	5	FacW	Herb

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

S25	0-18"	Sandy Loam	10YR 2/1	sat	<i>Alnus rubra</i>	15	Fac	Tree
Wetland			w/motts		<i>Rubus spectabilis</i>	45	Fac+	Shrub
					<i>Acer circinatum</i>	25	Fac-	Shrub

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

Field Data

Lawson Hills (Main Property and Parcel A)

Investigation Dates: March - Oct 2005 and Oct - Dec 2007

S26	0-18"	Sandy Loam	10YR 2/1	sat	<i>Alnus rubra</i>	15	Fac	Tree
Wetland			w/motts		<i>Rubus spectabilis</i>	45	Fac+	Shrub
					<i>Acer circinatum</i>	25	Fac-	Shrub

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

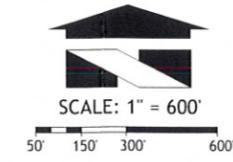
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S28	0-18"	Sandy Loam	10YR 2/1	sat	<i>Alnus rubra</i>	15	Fac	Tree
Wetland			w/motts		<i>Rubus armeniacus</i>	50	FacU	Shrub
					<i>Rubus spectabilis</i>	15	Fac+	Shrub
					<i>Acer circinatum</i>	25	Fac-	Shrub

Conclusion: Wetland - Parameters for hydrophytic vegetation, hydric soils, and wetland hydrology are met.

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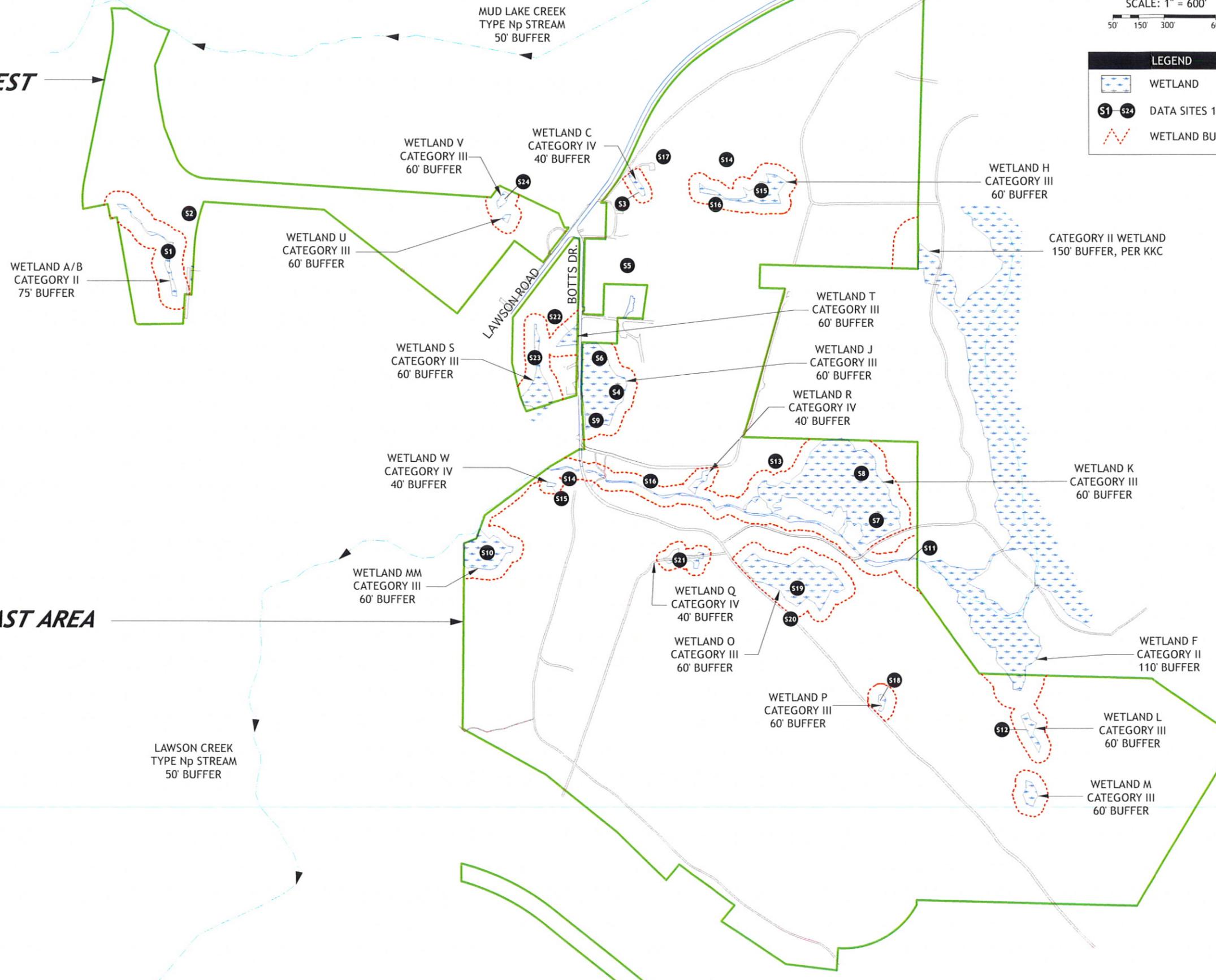
# SENSITIVE AREAS MAP LAWSON HILLS - MAIN PROPERTY



LEGEND	
	WETLAND
	DATA SITES 1 - 24
	WETLAND BUFFERS

**NORTHWEST AREA**

**SOUTHEAST AREA**



SENSITIVE AREAS MAP  
**NORTH TRIANGLE**  
 CITY OF BLACK DIAMOND, WASHINGTON  
  
 Black Diamond Properties, LP  
 Attn: David MacDuff  
 825 5th Ave., Ste. 202  
 Kirkland, WA 98033  
  
 WRI Job # 04444  
 Drawn by: A. Bachman  
 Date: July 21, 2009

**Wetland Resources, Inc.**  
 Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance  
 9505 19th Avenue S.E. Suite 106 Everett, Washington 98208  
 Phone: (425) 337-3174  
 Fax: (425) 337-3045  
 Email: mailbox@wetlandresources.com

**SENSITIVE AREAS MAP  
NORTH TRIANGLE**

APPROXIMATE BOUNDARY OF OFF-SITE  
CATEGORY I WETLAND - 215' BUFFER, PER KKC  
NOT SURVEYED, DATA FROM NWI MAPS

HIGHWAY 169 (PSHS)

WETLAND A1  
CATEGORY III  
60' BUFFER

STREAM S1 TYPE Ns  
50' BUFFER

2' WIDE  
WOOD BRIGE

WETLAND A2  
CATEGORY III  
60' BUFFER

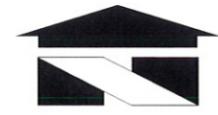
WETLAND A6  
CATEGORY III  
60' BUFFER

WETLAND A3  
CATEGORY III  
60' BUFFER

S26

S27

S25



Scale 1" = 200'

0 100 200 300

**LEGEND**

-  WETLAND
-  WETLAND BUFFERS
-  S25  S27 DATA SITES 26 - 27

SENSITIVE AREAS MAP  
**NORTH TRIANGLE**  
CITY OF BLACK DIAMOND, WASHINGTON

Black Diamond Properties, LP  
Attn: David MacDuff  
825 5th Ave., Ste. 202  
Kirkland, WA 98033

WRI Job # 04444  
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