EXHIBIT 47 SUB17-02

Dawson's Ridge Density Transfer Subdivision FISH & WILDLIFE HABITAT CONSERVATION AREAS PRELIMINARY MITIGATION PLAN

Camas, Washington



<u>Prepared for:</u> McIntosh Ridge PRD, LLC 16420 NE McGillivray Blvd. #103-197 Vancouver WA, 98683 Prepared by: The Resource Company, Inc. 8415 N.E. 8th Avenue Vancouver, WA 98665 (360) 693-4555

August 3, 2017



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PRELIMINARY RIPARIAN HABITAT MITIGATION PLAN

Project: Applicant: Location: Legal Description:	Dawson's Ridge Density Transfer Subdivision McIntosh Ridge PRD, LLC, 4626 NW McIntosh Road, Camas, Washington NE ¹ / ₄ & SE ¹ / ₄ of Section 08, T01N, R03E & SW ¹ / ₄ of Section 09, T01N, R03E, W.M.; Clark County
Serial Number(s):	127144-000, 127162-000, 127162-003, 127162-007, 127162-009, 127167-000, 127168-000, 127169-000, 127170-000, 127171-000, 127174-000, & 127175-000
Local Jurisdiction:	City of Camas
Study Area Size:	39 acres
Project Type:	Subdivision
Zoning:	R-15
ComPlan:	SFL
Assessment by:	Kevin Grosz, PWS & Eli Schmitz
Site Visit(s): Habitat Assessment	September 23 and October 25, 2016
Report Date: Preliminary Habitat Mitigation	November 1, 2016
Plan Date:	August 3, 2017

INTRODUCTION

This report details the preliminary riparian habitat mitigation plan prepared for Dawson's Ridge Density Transfer Subdivision project by The Resource Company, Inc. (TRC). The project is located at or near 4626 NW McIntosh Road, Camas, Washington (Fig. 1). The Applicant (McIntosh Ridge PRD, LLC) is proposing single family detached housing within the project area. The proposed development plan provides residences, open space, trail, and access and utility improvements in a uniquely designed master-planned setting that preserves unique natural elements within and adjacent to the project (Figs. 2 & 3). This plan addresses the proposed encroachment into a riparian habitat buffer for the construction of a sidewalk on the west side of the existing cul-de-sac and access road, for a stormwater outfall, landscaping at the entrance, providing area for Lot 39, and the installation of a portion of the stormwater pipeline. These encroachments are regulated under the Camas Critical Areas Ordinance (CCAO), Camas Municipal Code (CMC) 16.61 (Fish and Wildlife Habitat Conservation Areas).

EXISTING CONDITIONS

The study area encompasses all or portions of the tax lots listed above, totaling 39-acres. Several single-family residences and outbuildings are located within the site. The single-family residences are located in the southern portion of the study site, which overlooks the Columbia River. Most of the property exists as grassland, pastureland, or manicured lawns, except for the southwest corner and western edge, which is forested. The topography of this site is very diverse, with slopes ranging from 5 percent to 60 percent (Fig. 4).

Through the course of a habitat assessment conducted in the fall of 2016 three (3) streams were identified on-site and one (1) on the adjacent property to the east (Fig. 5). In addition, the site contains two emergent wetlands, four forested wetlands and two scrubshrub wetlands. The stream habitats are described below. A description of the wetlands is found in the wetland delineation report dated October 28, 2016.

Streams (Fig. 5)

Deer Creek is a perennial Type F stream that occurs along the northern property boundary. This stream is located in a shallow, forested, incised ravine dominated by red alder (*Alnus rubra*), western red cedar (*Thuja plicata*) and black cottonwood (*Populus balsamifera*). The stream flows west for a short distance, near the northeast corner of the study site, before crossing to the south side of NW McIntosh Road. From this point, the stream flows in a westerly direction adjacent to NW McIntosh Road until the intersection with Brady Road. At the intersection with Brady Road, the stream flows south on the east side of Brady Road, crosses under SR- 14, and discharges into the Columbia River. The stream averaged a channel width of 3-4 feet with an estimated flow rate of 1.67 cubic feet per second (cfs). Type F streams (fish-bearing, non-anadromous) are protected by a 75foot riparian buffer as per CMC16.61.040(D) (Fig. 5).

Three intermittent tributaries to Deer Creek occur near the entrance of the property (2 onsite, 1 off-site) (Fig. 5). All three intermittent streams are located on the south side of Deer Creek. All three intermittent streams flow to the north for a short distance until their confluence with Deer Creek. These streams are seasonal, non-fish bearing (Type Ns) and are protected by a 25-foot riparian buffer (Fig. 5) as per CMC16.61.040(D).

<u>Uplands</u>

Upland areas consist of forest and open grassland plant communities. The forest plant community is dominated by a Douglas-fir, big-leaf maple and red alder tree layer. The shrub stratum is predominantly hazelnut (*Corylus cornuta*) and vine maple (*Acer circinatum*). Vegetation in the open grassland plant community is dominated by tall false rye grass (*Schedonorus arundinacea*), colonial bentgrass, dove's foot geranium (*Geranium molle*), and great plantain (*Plantago major*).

Photographs of the proposed impact and compensation areas are shown in Photo-sheet 1.

MITIGATION SEQUENCING (CMC 16.51.170)

The Applicant has avoided all direct impacts to the regulated streams within the project area. However, the Applicant is proposing the encroachment into a riparian habitat buffers for the construction of a sidewalk on the west side of the existing cul-de-sac and access road, for a stormwater outfall, landscaping at the entrance, providing area for Lot 39, and the installation of a portion of the stormwater pipeline. The construction of these features will be the minimum necessary for their construction and installation. These habitat impacts will be compensated though a combination of buffer averaging and enhancement of riparian habitat on-site, near the impact areas. These impacts and proposed compensations are detailed below.

RIPARIAN BUFFER IMPACTS & COMPENSATION (Fig. 6)

The Applicant is proposing to impact the riparian zone of Deer Creek for the construction of a sidewalk along the west edge of the existing access road and cul-de-sac, for providing sufficient area for Lot 39 and the installation of the stormwater pipeline near Lot 40. In addition, a stormwater outfall is proposed to be partially constructed in the riparian buffer for one of the seasonal streams and the entrance landscaping area will encroach within the riparian buffer for the off-site Type Np Stream. None of the construction will occur within the ordinary high water mark of these streams. The riparian buffer impacts and compensation are outlined below:

IMPACTS/COMPENSATION

Sidewalk Impact

The Applicant is proposing the construction of a sidewalk along the west edge of the existing access road and cul-de-sac as shown in Figure 5. The northern portion of the sidewalk will be constructed within the riparian habitat buffer (75') for Deer Creek (Fig. 6). The proposed sidewalk will impact 654 ft² of the riparian habitat buffer (Fig. 6). Currently, vegetation in this area is dominated by blackberry and grass that is maintained (mowed) periodically as seen in the photographs of this area (Photo-Sheet 1). Due to the periodic mowing the habitat value for this area is low.

Stormwater Outfall Impact

The Applicant is proposing the installation of a stormwater outfall within the 25-foot riparian buffer of the Type Ns stream near the existing site access road as shown in Figure 6. The proposed outfall will impact 185 ft² of riparian habitat buffer (Fig. 6). Currently, vegetation in this area is dominated by blackberry as seen in the photographs of this area (Photo-Sheet 1). Due to the lack of plant diversity in the impact area, the habitat value for this area is low.

Entrance Landscaping Impact

The Applicant is proposing the installation of the entrance landscaping within the 25-foot riparian buffer of the Type Ns stream that is located off-site to the east as shown in Figure 6. The proposed landscaping area will impact a total of 1,008 ft² of riparian habitat buffer (Fig. 6). Currently, vegetation in this area is a combination of open grassland and

blackberry that is mowed periodically (Photo-Sheet 1). Due to the lack of plant diversity in the impact area, the habitat value for this area is low.

All of the above riparian buffer impacts will either reduce the buffer to less than 50 percent (CMC 16.61.030(E)(3)(e) or to less than 25 feet (CMC 16.61.030(E)(3)(f). Therefore, buffer averaging is not proposed for these impacts and buffer enhancement will be employed to replace the loss of riparian habitat as outlined below.

Riparian Habitat Buffer Compensation

To compensate for the riparian habitat buffer impacts (1,847 ft²) for the riparian buffer impacts outlined above, the Applicant will enhance the area shown in Figure 6. The enhancement area (3,694 ft²) is located adjacent to the riparian buffers for both Deer Creek and the Type Ns stream. The goal of the mitigation is to compensate for the loss of 1,847 ft² of riparian buffer habitat at a minimum of a 2:1 ratio. Currently, the proposed enhancement area is an open grassland plant community that is mowed periodically. The enhancement of this area will consist of planting native trees which will add diversity and structure to the riparian buffer. The proposed planting plan is specified below.

Buffer Averaging Reduction and Compensation

To compensate for the additional area for Lot 39 and the installation of the stormwater pipeline near Lot 40, the Applicant is proposing to use buffer averaging as outlined in CMC 16.61.030(E)(3). To provide sufficient area for Lot 39, the riparian buffer will be reduced by 442 ft² (Fig. 6). The installation of the pipeline near Lot 40 will reduce the riparian buffer by 131 ft². This is a temporary impact, but will be averaged so that restoration is not required. The total riparian buffer reduction area is 573 ft². To compensate for these riparian buffer reductions, the Applicant is proposing to increase the riparian buffer by 573 ft² in the area shown in Figure 6.

Both of these reduction areas are within the open grassland portion of the site. CMC 16.61.030(E)(3)(a-f) requires certain conditions be met prior to approval. These conditions and responses to those conditions follow:

(a) Will not reduce stream or habitat function. The reduction areas are in the open grassland portion of the site that is periodically mowed. Vegetation in the proposed compensation area is primarily a shrub plant community adjacent to the existing riparian buffer in that area. Neither stream nor habitat function will be reduced by the buffer averaging.

(b) Will not adversely affect salmonid habitat. Salmonids are not present in Deer Creek. The project will not impact downstream (Columbia River) salmonids or their habitat.(c) Provide additional natural resource protection, such as buffer enhancement. As stated above, the riparian buffer compensation area is of higher quality habitat than the buffer

reduction area. (d) Buffer area not reduced by more than 50 percent in any location. The buffer reduction area meets this condition.

(e) The buffer area is not less than 25 feet. The buffer area meets this condition.

PROJECT SCHEDULE

This project is proposed to begin construction as soon as the appropriate permits are received. Habitat buffer enhancement activities will take place during the first planting season following habitat impacts

PLANTING PLAN

The riparian buffer enhancement area (3,694 ft²) will be planted with native trees and shrubs at a rate of 5 trees and 10 shrubs per 1000 ft².

Species	Plant Form	Minimum Size	Minimum Spacing	Required Number
Trees		•		
Western Red Cedar (<i>Thuja plicata</i>)	Seedling	18"	10'	2
Douglas-Fir (Psuedotsuga menziesii)	Seedling	18"	10	8
Big-Leaf Maple (Acer macrophyllum)	Bare Root	24"	10	8
			Total Trees	18
Shrubs				
Snowberry (Symphoricarpos albus)	Bare Root	18-24"	8'	14
Indian Plum (Oemleria cerasiformis)	Bare Root	18-24"	12'	8
vine maple (Acer circinatum)	Bare Root	18-24"	12'	6
beaked hazelnut (Corylus cornuta)	Bare Root	18-24"	8'	14
			Total Shrubs	36

Table 1. Planting Plan Specifications – Riparian Enhancement Area (3,694 ft²),5 trees/10 shrubs per 1,000 sq. ft. (Fig 6).

<u>Source of Plant Materials</u>. All plants will be obtained from nurseries specializing in native Pacific Northwest plant materials.

<u>Planting Time</u>. Bare-root shrubs and trees should be planted between December 1 and March 31, when plants are dormant. If planting is conducted outside this time period, containerized plant stock will be used and extra care and watering may be needed to ensure that plants become adequately established.

<u>Planting Guidelines</u>. A hole, one foot in diameter and one foot deep, shall be excavated for bare root stock. The holes should be large enough to accommodate the plant roots without restriction. Plants will be held in place with the top of the root mass at ground level. Topsoil will be backfilled around the roots and lightly tamped to remove any air pockets in the soil. Future maintenance should use scarification to keep the 1-foot diameter area free of herbaceous vegetation until plants are well established. If the soils are not saturated, each plant should be watered at the time of planting. Supplemental

watering (3-40 times during the summer season) may also be required to ensure plant survival and mitigation success.

PERFORMANCE CRITERIA

Performance measures and standards are used to provide a basis for evaluating whether the project's goals and objectives are being met. This plan established the following criteria as the basis for evaluating mitigation compliance and success. In order to meet the goals and objectives, the mitigation must meet the following criteria:

The City requires a minimum of five (5) years of monitoring and maintenance, The criteria listed below are intended to meet the requirements of CMC 16.61 for this project. Performance measures and standards are used to provide a basis for evaluating whether the project's goals and objectives are being met. In order to meet the goals and objectives, the mitigation must meet the following criteria:

- 1. <u>Native Woody Species (Buffer Enhancement Area)</u>
 - a. <u>Performance Standard Year 1 Planted</u>, native woody species in the buffer area will achieve at least 100 percent survival one year after the site is planted. If dead plants are replaced, the performance standard will be met.
 - <u>Performance Standard Years 2-4</u> Native woody species (planted or volunteer) will achieve a density of a minimum of 6 shrubs and 3 trees per 1000 ft² in the enhanced buffer areas.
 - c. <u>Performance Standard Year 5</u> at least 50 percent aerial coverage of native trees and shrubs. Natural colonization can make it difficult to separate planted individuals from volunteer trees and shrubs. Therefore, naturally colonized species will be included in vegetation monitoring.
- 2. Invasive species (all years)
 - a. <u>Performance Standard</u> During All Years, non-native, invasive plant species will not exceed 20 percent aerial cover in the riparian buffer enhancement area.

MONITORING AND MAINTENANCE PLANS

The following actions will be implemented as part of the buffer mitigation monitoring and maintenance plan on this site:

- 1. The initial and all successive year plantings will be supervised by a qualified professional (as defined by CMC 16.53.030) to ensure that correct planting procedures are followed; that plantings are done according to the planting scheme; and to determine if the enhancement areas are meeting the performance standards listed above.
- 2. Monitoring of all planted areas will commence the summer following the initial planting (year 1) and continue in years 2, 3, 4, and 5. Monitoring will be

conducted by a qualified professional during the late spring or summer time period. Monitoring will consist of walking the site during mid- to late summer to assess the enhancement area to determine if the performance standards are being met. The monitoring report will identify deficiencies in the mitigation progress and any contingency measures that will be taken to correct those deficiencies. Photographs taken from established photo-stations will be included with these reports. For each year that monitoring is required, a report documenting the monitoring results will be submitted to the City.

- 3. To ensure planting success, the Applicant will be responsible for performing minor maintenance over the monitoring period. This will include the selective removal of undesirable plant species such as blackberry (*Rubus* spp.) that may be hindering the growth and establishment of the favored plant stands. An area, 1-foot in diameter surrounding each planted woody species, will be kept free of competing vegetation. This can be accomplished either by scarifying the area by hand or through the use of weed-control rings.
- 4. Maintenance of all mitigation areas may include irrigation of the planted stock. A watering schedule will be established during the dry months (June through September) so that the plants are watered on a weekly basis during this time period. If necessary, a temporary above ground irrigation system capable of watering all of the mitigation areas will be installed.
- 5. Any maintenance that is required within the enhancement area will be supervised by a qualified wetland professional (as defined by CMC 16.53.030) familiar with this project.

ADAPTIVE MANAGEMENT PLANS

Adaptive management plans are designed to identify potential courses of action, and any corrective measures to be taken when monitoring indicates project goals are not being met. Table 2 summarizes the maintenance and contingency requirements for this project. In general, the contingency measures for this site are as follows:

- 1. <u>Replacement Plantings</u>—Replacement plantings will be made throughout the monitoring period if monitoring reveals that unacceptable plant mortality has occurred. Woody species will be re-planted to the original number of plants proposed in the accepted mitigation plan annually throughout the duration of the monitoring and maintenance period.
- 2. <u>Planting Plan Modifications</u>—Modifications to the planting plan (i.e., plant species and densities) will be made if monitoring identifies problems with the original planting scheme. For example, if annual monitoring identifies that plant mortality is attributed to an inappropriate hydrologic regime, the replacement plantings should be made using a more suitable plant species. Any recommended changes to the planting scheme will be documented in the annual monitoring

report. The addition of any new plant species, not already included in this enhancement plan, must be approved by the City.

3. <u>Soil Erosion</u>—Any areas demonstrating soil erosion problems will be restored as soon as possible. If there does not appear to be a problem with the original design, the eroded areas will be restored by replacing any lost topsoil and replanted according to the original planting scheme.

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
Enhancement Areas	Trash and debris	Any trash or debris which exceeds $1 \text{ ft}^3/100\text{ft}^2$ (equal to the volume of a standard size office garbage can). In general, there should be no evidence of dumping.	Trash and debris cleared from site.
Enhancement Areas	Erosion	Eroded damage >2 inches deep where cause of damage is still present or where there is potential for continued erosion.	Eroded areas should be stabilized with appropriate erosion control BMPs (e.g., seeding, mulching, rip rap).
Enhancement Areas	Plant mortality	Plant mortality jeopardizes attaining the required survival rate.	Plants should be replaced according to the planting plan. Modifications to the planting plan should be made if monitoring identifies problems with the original planting scheme.
Enhancement Areas	Invasion of undesirable plant species.	Undesirable plant species are hindering the growth and establishment of the favored plant stands.	Undesirable species removed by hand, or in accordance with recommendations of the Clark County Weed Control Board.

Table 2. Maintenance And Adaptive Management Requirements.

ATTACHMENTS

FIGURE 1 – PROJECT LOCATION

FIGURE 2 – PROPOSED SITE PLAN - PHASE I

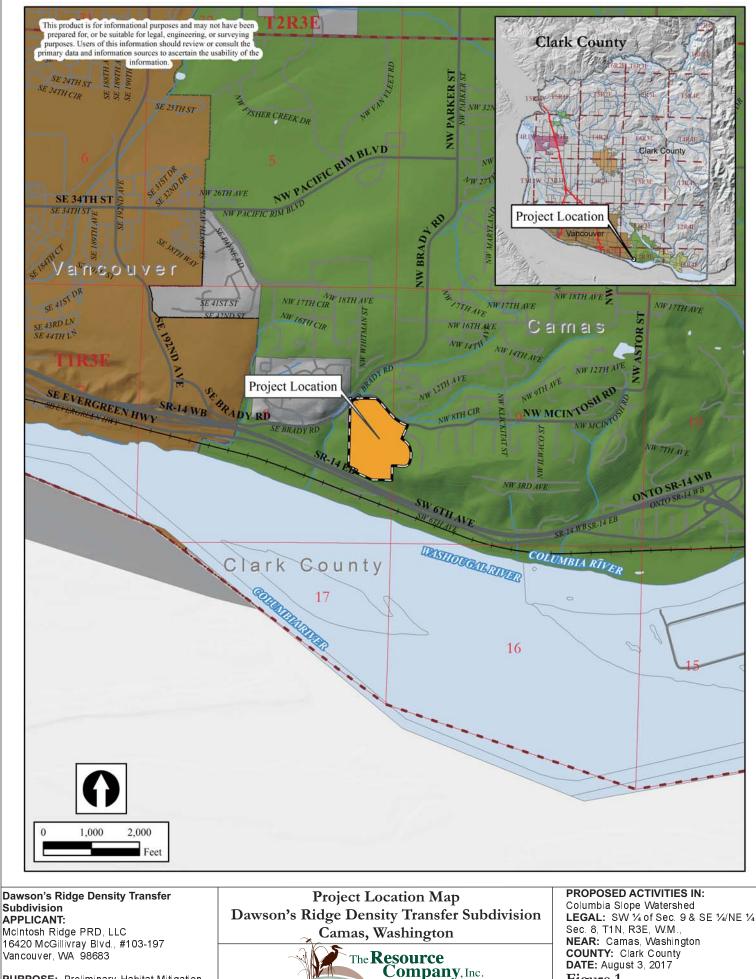
FIGURE 3 – PROPOSED SITE PLAN - PHASE II

FIGURE 4 – CLARK GIS LIDAR TOPOGRAPHY

FIGURE 5 – IDENTIFIED PRIORITY HABITATS

FIGURE 6 – RIPARIAN BUFFER IMPACT & MITIGATION AREAS

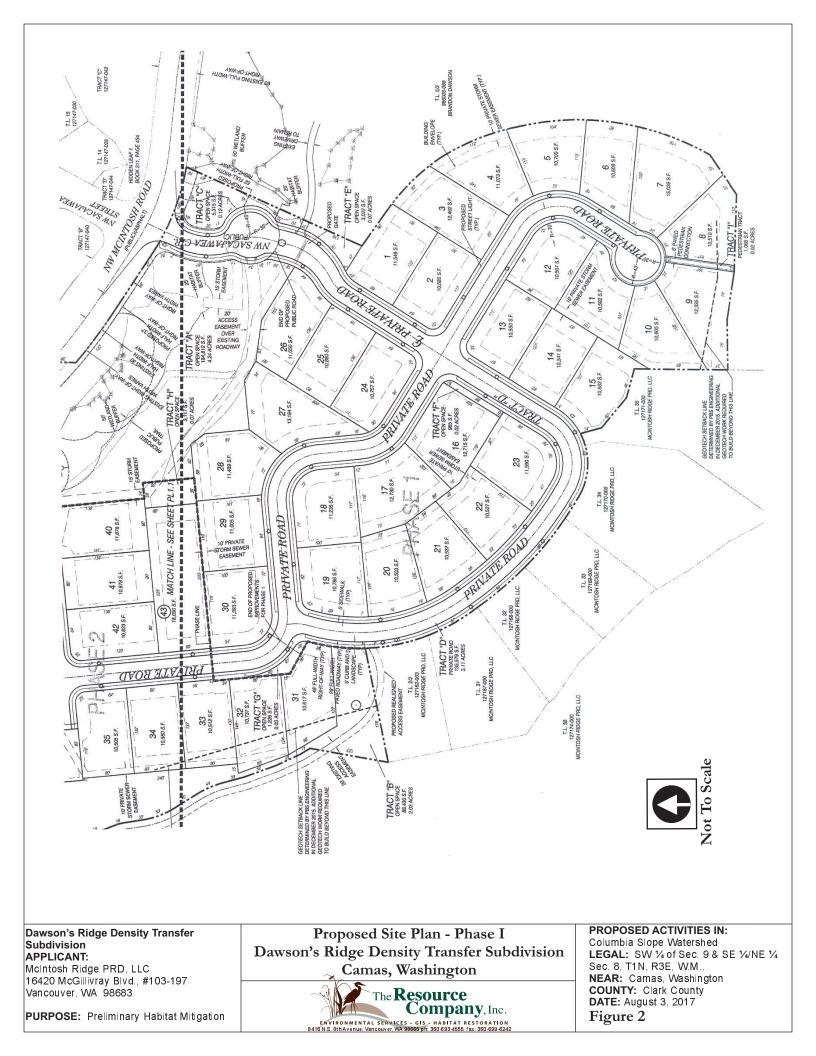
PHOTO-SHEET 1 - RIPARIAN BUFFER IMPACT AND COMPENSATION AREAS

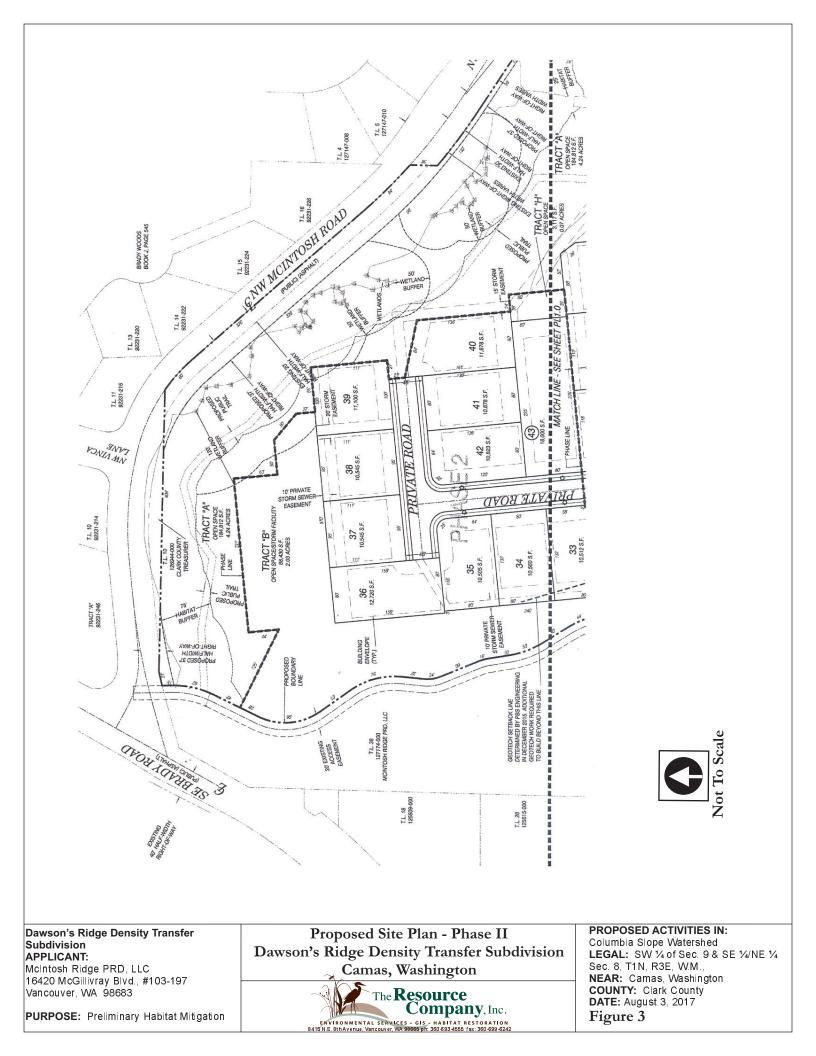


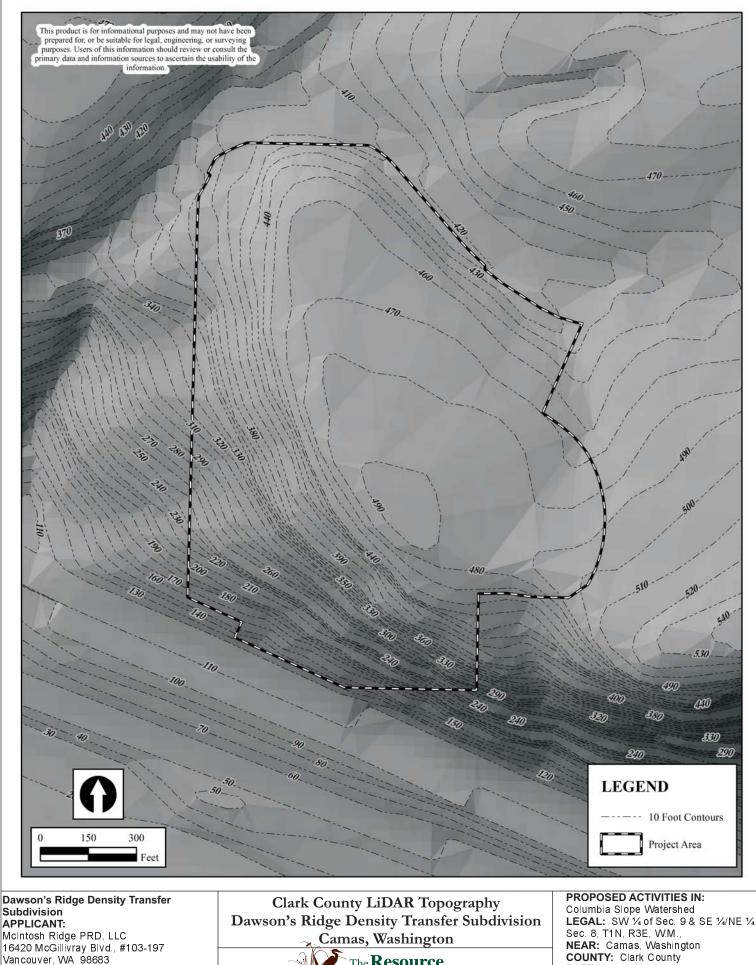
ENVIRONMENTAL SERVICES - GIS - HABITAT RESTORATION 8415 N.E. 8th Avenue, Vancouver, WA 98665 ph: 360-593-4555 fax: 360-599-5242

PURPOSE: Preliminary Habitat Mitigation

DATE: August 3, 2017 Figure 1

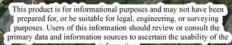






PURPOSE: Preliminary Habitat Mitigation

The **Resource** Company, Inc. ENVIRONMENTAL SERVICES - GIS - HABITAT RESTORATION 8415 N.E. 8th Avenue, Vancouver, WA 98666 ph. 380-893-4555 fax: 360-899-4242 COUNTY: Clark County DATE: August 3, 2017 Figure 4



information. LEGEND Type F Stream - 75 foot buffer Type Np Stream - 50 foot buffer Type Ns Stream - 25 foot buffer Riparian Habitat Conservation Area Project Area

Dawson's Ridge Density Transfer Subdivision McIntosh Ridge PRD, LLC 16420 McGillivray Blvd., #103-197 Vancouver WA 98683

125

250

Feet

PURPOSE: Preliminary Habitat Mitigation

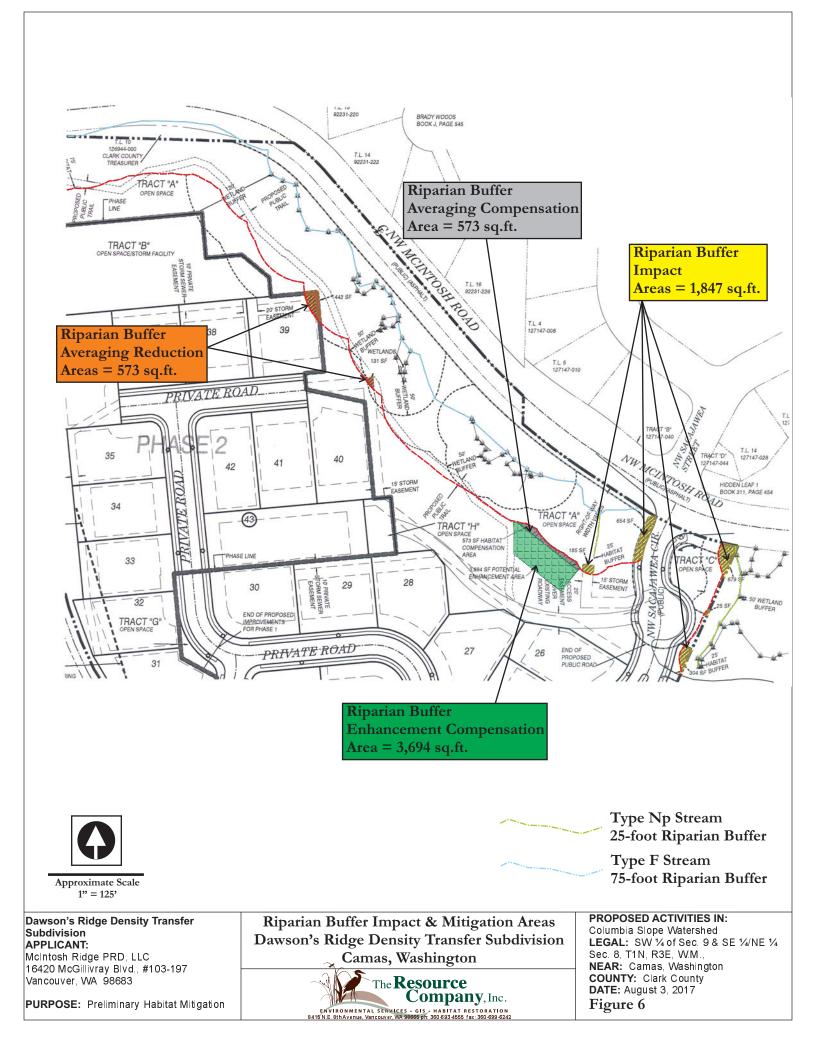
Identified Priority Habitats Dawson's Ridge Density Transfer Subdivision Camas, Washington The **Resource**

Company, Inc. ENVIRONMENTAL SERVICES - GIS- HABITAT RESTORATION 8415 N.E. BINAYERUL VARCOUVER WA 3980697. 500.893-4565 1at. 360-893-6242

DS. USDA. U

PROPOSED ACTIVITIES IN: Columbia Slope Watershed LEGAL: SW 1/4 of Sec 9 & SE 1/4/NE 1/4 Sec. 8, T1N, R3E, W.M., NEAR: Camas, Washington COUNTY: Clark County DATE: August 3, 2017 Figure 5

Source: Esrl, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS; USDA, USGS, AeroGRID, IGN, and the GIS User Community





Existing Habitat Conditions - Proposed Sidewalk



Existing Habitat Conditions - Proposed Outfall



Existing Habitat Conditions - Proposed Sidewalk



Existing Habitat Conditions - Proposed Outfall



Existing Habitat Conditions - Proposed Mitigation Area



Existing Habitat Conditions - Deer Creek

Dawson's Ridge Density Transfer Subdivision APPLICANT: McIntosh Ridge PRD, LLC 16420 McGillivray Blvd., #103-197 Vancouver, WA 98683

PURPOSE: Preliminary Habitat Mitigation

Riparian Buffer Impact & Compensation Areas Dawson's Ridge Density Transfer Subdivision Camas, Washington

The **Resource Company**, Inc. ENVIRONMENTAL SERVICES - 015. HABITAT RESTORATION 8415/NE SINAvenue, Vancouver, MA 3986695h: 506.933-465. for: 300.699-2422 PROPOSED ACTIVITIES IN: Columbia Slope Watershed LEGAL: SW ¼ of Sec. 9 & SE ¼/NE ¼ Sec. 8, T1N, R3E, W.M., NEAR: Camas, Washington COUNTY: Clark County DATE: August 3, 2017 Photo Sheet 1