

LACAMAS HEIGHTS ELEMENTARY SCHOOL PRELIMINARY RIPARIAN BUFFER AVERAGING & OREGON WHITE OAK HABITAT MITIGATION PLAN

Camas, Washington



Prepared for:

Camas School District
841 N.E. 22nd Avenue
Camas, WA 98607

Prepared by:

The Resource Company, Inc.
8415 N.E. 8th Avenue
Vancouver, WA 98665
(360) 693-4555

December 22, 2016



TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 EXISTING CONDITIONS.....	1
3.0 PRIORITY HABITAT MITIGATION	2
4.0 GOALS AND OBJECTIVES	4
5.0 PERFORMANCE STANDARDS	5
6.0 MONITORING AND MAINTENANCE	5
7.0 ADAPITIVE MANAGEMENT	6
8.0 ADDITIONAL MEASURES	7

ATTACHMENTS

FIGURE 1 – PROJECT LOCATION

FIGURE 2 – PROPOSED SITE PLAN

FIGURE 3 – CLARK COUNTY LIDAR TOPOGRAPHIC MAP

FIGURE 4 – EXISTING PRIORITY HABITATS

FIGURE 5 – RIPARIAN BUFFER REDUCTION/COMPENSATION AREAS

FIGURE 6 – OREGON WHITE OAK REMOVAL/COMPENSATION

PHOTO-SHEET 1 – PHOTOGRAPHS OF PROJECT AREA

PRIORITY HABITAT MITIGATION PLAN

Project:	Lacamas Heights Elementary School
Applicant:	Camas School District
Location:	1111 N.E. 232nd Avenue, Camas, Washington
Legal Description:	NW ¼ of Sec. 27, T02N, R03E, W. M., Clark County
Serial Number(s):	175724-000
Local Jurisdiction:	City of Camas
Study Area Size:	40 acres
Project Type:	Elementary School
Zoning:	R-7.5
ComPlan:	SFM
Assessment by:	Kevin Grosz, PWS & Eli Schmitz
Site Visit(s):	April 30, May 30 & June 20, 2014
Habitat Assessment Report Date:	July 7, 2014
Mitigation Plan Report Date:	December 22, 2016

1.0 INTRODUCTION

This report details the preliminary compensatory habitat mitigation prepared by The Resource Company (TRC) for the removal of one (1) Oregon white oak (*Quercus garryana*) tree and riparian buffer averaging for the Lacamas Heights Elementary School (LHES). The study area is located at 1111 N.E. 232nd Avenue, Camas, Washington (Fig. 1). The Camas School District is proposing the construction a public elementary school and associated infrastructure on the 40-acres site as shown in Figure 2. Oregon white oak (aka Garry oak) and riparian habitat were identified on the project area during a habitat assessment that was conducted in July 2014. Both of these habitats are regulated under the City of Camas' Fish and Wildlife Habitat Conservation Areas Ordinance (Camas Municipal Code (CMC) 16.61). This preliminary mitigation plan addresses the compensation for the removal of one Garry oak based on the loss of oak canopy cover and riparian buffer averaging under the guidelines CMC 16.61. To be consistent the proposed mitigation is based on recommendations by the Washington Department of Fish and Wildlife (WDFW) for previous Garry oak impacts and compensation on recent projects.

2.0 EXISTING CONDITIONS

Currently, the property contains two single family residences and several outbuildings near the western edge of the site. Historically, the site has been used for agricultural purposes, primarily domestic livestock grazing. The property predominantly slopes from northeast to southwest (Fig. 3). The majority of the study area is an open grassland plant community with a band of trees near the northern and western property lines. Vegetation in the grassland community is dominated by orchardgrass (*Dactylis glomerata*),

vernalgrass (*Anthoxanthum odoratum*), velvetgrass (*Holcus lanatus*), tall fescue (*Schedonorus arundinaceus*), and timothy *Phleum pratense*). Vegetation in the forested portions of the site consists of a Douglas fir (*Pseudotsuga menziesii*), Oregon white oak, big-leaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), and black cottonwood (*Populus balsamifera*) tree layer. The shrub layer is sparse but consists of hazelnut (*Corylus cornuta*), vine maple (*A. circinatum*) and oso-berry (*Oemleria cerasiformis*). Ground cover is dominated by orchardgrass, bull thistle (*Cirsium vulgare*), tansy ragwort (*Senecio jacobaea*), and large patches of blackberries (*Rubus* spp.). Sixteen oaks in the western and northern portions of the property were identified during the July 2014 habitat assessment (Fig 4). Three streams and their associated riparian habitat occur in the northern and southwestern sections of the site. The main stream that flows east to west across the site is a Type F stream with a 75-foot riparian buffer (Fig. 4). The stream in the southwest corner is perennial stream (Type Np) protected by a 50-foot riparian buffer and the stream in the northwest corner of the site is perennial (Type Np) protected by a 25-foot riparian buffer (Fig. 4). In addition, six wetlands were delineated on the site. A detailed description of the six wetlands is provided in the revised wetland delineation report for the site dated March 29, 2016 prepared by TRC.

3.0 PRIORITY HABITAT MITIGATION

The Applicant is proposing to use buffer averaging to reduce the riparian buffer on the northern edge of the development site and to remove one Garry oak in the southwest corner of the site for the construction of the roadway. These activities are regulated under CMC 16.51 and 16.61. The proposed impacts and compensation (Figs. 5 & 6) are outlined below:

3.1 RIPARIAN BUFFER AVERAGING

The applicant is proposing to encroach into the 75-foot riparian buffer of the Type F stream along the northern edge of the development. This encroachment is within the open grassland portion of the riparian zone and will not require the removal of woody vegetation. The applicant is proposing to decrease the buffer in the areas shown in Figure 5 under the guidelines of CMC 16.61.030(E)(3)(a-f) which is outlined below

Habitat Buffer Averaging. The director may allow the recommended habitat area buffer width to be averaged in accordance with a critical area report, only if:

- a. It will not reduce stream or habitat functions;
- b. It will not adversely affect salmonid habitat;
- c. It will provide additional natural resource protection, such as buffer enhancement;
- d. The total area contained in the buffer area after averaging is no less than that which would be contained within the standard buffer;
- e. The buffer area width is not reduced by more than fifty percent in any location;
- and
- f. The buffer area width is not less than twenty-five feet.

Riparian Buffer Reduction (Fig. 5) The total proposed buffer reduction area is 6,900 ft² as shown in Figure 5. The riparian buffer will not be reduced by more 50 percent in any area along the buffer. As stated above, the buffer reduction area is located in the open grassland and blackberry area along the outer edge of the 75-foot riparian buffer zone. From a functional standpoint this area provides water quality function for the stream and a transitional area for wildlife to forage and find shelter along the forest/grassland interface.

Riparian Buffer Compensation (Fig. 5)

To compensate for the buffer reduction, the outer edge the 75-foot riparian buffer will be extended outward by 8,250 ft² in the area shown in Figure 5. Vegetation in the compensation is primarily is similar in the plant community of the reduction area. Therefore, there should be no functional loss of habitat through this buffer averaging.

3.2 OAK IMPACT AND COMPENSATION

Oak Impacts

The applicant is proposing to remove one (1) Oregon white oak located near southwest corner of the property for the construction of a roadway (Fig. 6). The tree to be removed is greater than 12 inches breast height diameter (dbh) and meets the criteria of oak habitat within an urban setting. On recent oak mitigation projects, it has been WDFW's recommendation that the compensation should be based on loss of canopy cover at a 5:1 ratio. The canopy cover of the oak tree proposed for removal is 2,045 ft². Compensation for that canopy cover loss is outlined below.

Oak Compensation

As stated above, the compensation for the removal of the oak tree will be based on a 5:1 loss of canopy cover as recommended by WDFW. Therefore, the Applicant is proposing to compensate for the loss of 2,045 ft² of oak canopy cover by enhancing the 10,225 ft² area through planting Garry oak and a native woody understory in the northwest corner of the project site as shown in Figure 6.

The enhancement area appears to be suitable for oaks to grow, since there are existing oaks growing in adjacent settings that are similar. The compensation will consist of planting oaks and understory plantings on 10-foot centers which will provide 100 ft.² per tree and/or shrub. As per WDFW recommendations, 60 percent of the planting will consist of Oregon white oak (seeding) and the 40 percent native understory species (bare root stock) (See Table 1). Based on this density of planting the enhancement area (10,225 ft.²), the proposed compensation will consist of planting 61 oaks and 41 native shrubs (Fig. 6). This is a tree replacement ratio of 61:1.

Photographs of the project area are shown in Photosheet 1.

Table 1. Oak Enhancement Area Plantings (10,225 ft²)

Species	Plant Form	Minimum Size	Minimum Spacing	Required Number
Oregon White Oak (<i>Quercus garryana</i>)	Bare Root	3" to 6"	10'	61
Total Trees				61
Hazelnut (<i>Corylus cornuta</i>)	Bare Root	2'	6-10'	15
Oceanspray (<i>Holodiscus discolor</i>)	Bare Root	2'	10'	10
Snowberry (<i>Symphoricarpos albus</i>)	Bare Root	2'	3'	16
Total Shrubs				41
Total Plants				102

Downed Woody Debris: The oak removed will be placed as downed woody debris in the enhancement area shown in Figure 6.

Additional planting specifications applicable to this plan are listed below.

Source of Plant Materials. All plants will be obtained from nurseries specializing in plant materials native to the Pacific Northwest.

Planting Time. Bare-root shrubs and trees should be planted between December 1 and February 28, 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.

Planting Guidelines. 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. Mulch (3 inches deep) shall be applied around the base of each plant. Future maintenance should use scarification (by hand) 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 (every two weeks during the summer season) may also be required to ensure plant survival and mitigation success.

4.0 GOALS AND OBJECTIVES

The goal of this compensation plan is the no-net-loss of habitat on-site by planting native oaks in the compensation portion of the study area (Fig. 6). The specific objectives are as follows:

Objective 1: Replace the habitat loss of the one removed oak through enhancement of the area shown in Figure 6.

Objective 2: Place the removed oaks as downed woody debris in the compensation area to provide additional habitat function.

5.0 PERFORMANCE STANDARDS

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:

1. Native Woody Species

Performance Measure Year 1 – Planted oaks in the compensation areas will achieve at least 50 percent survival one year after the site has been planted. Any plants not surviving will be planted back to the original number proposed in this plan.

Performance Measure Years 2-10 – Native woody species (planted or volunteer) will achieve at least 80 percent survival by the end of the monitoring period (year 10). For any year that the plantings are not surviving at 100 percent, replacement planting will be equal to the original number planted.

2. Invasive species (all years)

No more than 20% (cumulatively) of the cover during any monitoring period shall consist of noxious weeds, including but not limited to blackberries, ivy, thistle, Scotch broom, Queen Anne's lace, or purple loosestrife. There will be zero tolerance for Japanese knotweed.

6.0 MONITORING AND MAINTENANCE

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

1. The initial and all successive year plantings will be supervised by a qualified professional to ensure that correct planting procedures are followed and that plantings are done according to the planting scheme.

2. Monitoring will be conducted a minimum of 10 years as per CMC 16.61 for the plantings. Monitoring of all planted areas will commence the summer following the initial planting (year 1) and continue annually for the 10-years. Monitoring will be conducted by a qualified professional during the late spring or summer time period. For each year that monitoring is required, a report documenting the monitoring results will be submitted to the City of Camas. The report will identify deficiencies in the progress of the enhancement area and any contingency measures that will be taken to correct those deficiencies. Photographs taken from established photo-stations will be included with these reports.

3. The goal of the enhancement plan is to achieve 80% plant survivability by the end of the 10-year monitoring period. To determine if the enhancement areas are meeting the expected goal, the performance measures, as listed above, will be tied to each monitoring period.
4. Exotic species should cover less than 20 percent of the riparian restoration area.
5. 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.
6. Maintenance of the restoration area 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 the entire restoration area will be installed.
7. Any maintenance that is required within the restoration area will be supervised by a qualified professional familiar with this project.

7.0 ADAPTIVE MANAGEMENT PLAN

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. Replacement Plantings—Replacement plantings will also 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. Soil Erosion—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.

Table 2. Maintenance and Contingency Requirements

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
Planting Areas	Trash and debris	Any trash or debris which exceeds 1 ft ³ /100ft 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.
Planting 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).
Planting 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.
Planting 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.

8.0 ADDITIONAL MEASURES

The City may require the additional actions outlined below as part of the habitat permit for this project.

CMC 16.51.210 - Critical area markers, signs and fencing.

A. Temporary Markers. The outer perimeter of the management zones and/or critical areas may be required to be marked in the field in such a way as to ensure that no unauthorized intrusion will occur, and verified by the director prior to the commencement of permitted activities. This temporary marking, if required, shall be maintained throughout construction, and shall not be removed until permanent signs, if required, are

in place.

B. Permanent Signs. The city may require, as a condition of any permit or authorization issued pursuant to this chapter, that the applicant install permanent signs along the boundary of a critical area or management zone to city standards.

C. Fencing.

1. The director may condition any permit or authorization issued pursuant to this chapter to require the applicant to install a permanent fence to city specifications at the edge of the habitat conservation area or management zone, when, in the opinion of the city, fencing will reasonably minimize or prevent future impacts to the habitat conservation area.

2. Fencing installed as part of a proposed activity, or as required in this subsection, shall be designed so as to not interfere with species migration, including fish runs, and shall be constructed in a manner that minimizes habitat impacts.

CMC 16.51.240 - Critical area protective mechanism.

A. Identified critical areas and their associated buffer or management zones shall be protected and preserved through a permanent protective mechanism acceptable to the city. This may include placing the critical area and its associated buffer or management zone in a separate tract; executing a protective easement; or dedicating the critical area and its associated buffer or management zone to a public agency, or public or private land trust. The mechanism shall provide for maintenance of the critical area and its associated buffer or management zone.

B. If the protective mechanism includes placing the critical area and its associated buffer or management zone in a separate tract, then the critical area tract(s) shall:

1. Be recorded on all documents of title of record for all affected lots;
2. Be designated on the face of the plat or recorded drawing in a format approved by the city. The designation shall include the following restriction:
 - a. An assurance that native vegetation will be preserved for the purpose of preventing harm to property and the environment, including, but not limited to, controlling surface water runoff and erosion, maintaining slope stability, management zoning, and protecting plants and animal habitat; and
 - b. The right of the city to enforce the terms of the restriction.

C. The city may require that any required critical area tract be dedicated to the city, or held by an incorporated homeowner's association or other legal entity.

ATTACHMENTS

FIGURE 1 – PROJECT LOCATION

FIGURE 2 – PROPOSED SITE PLAN

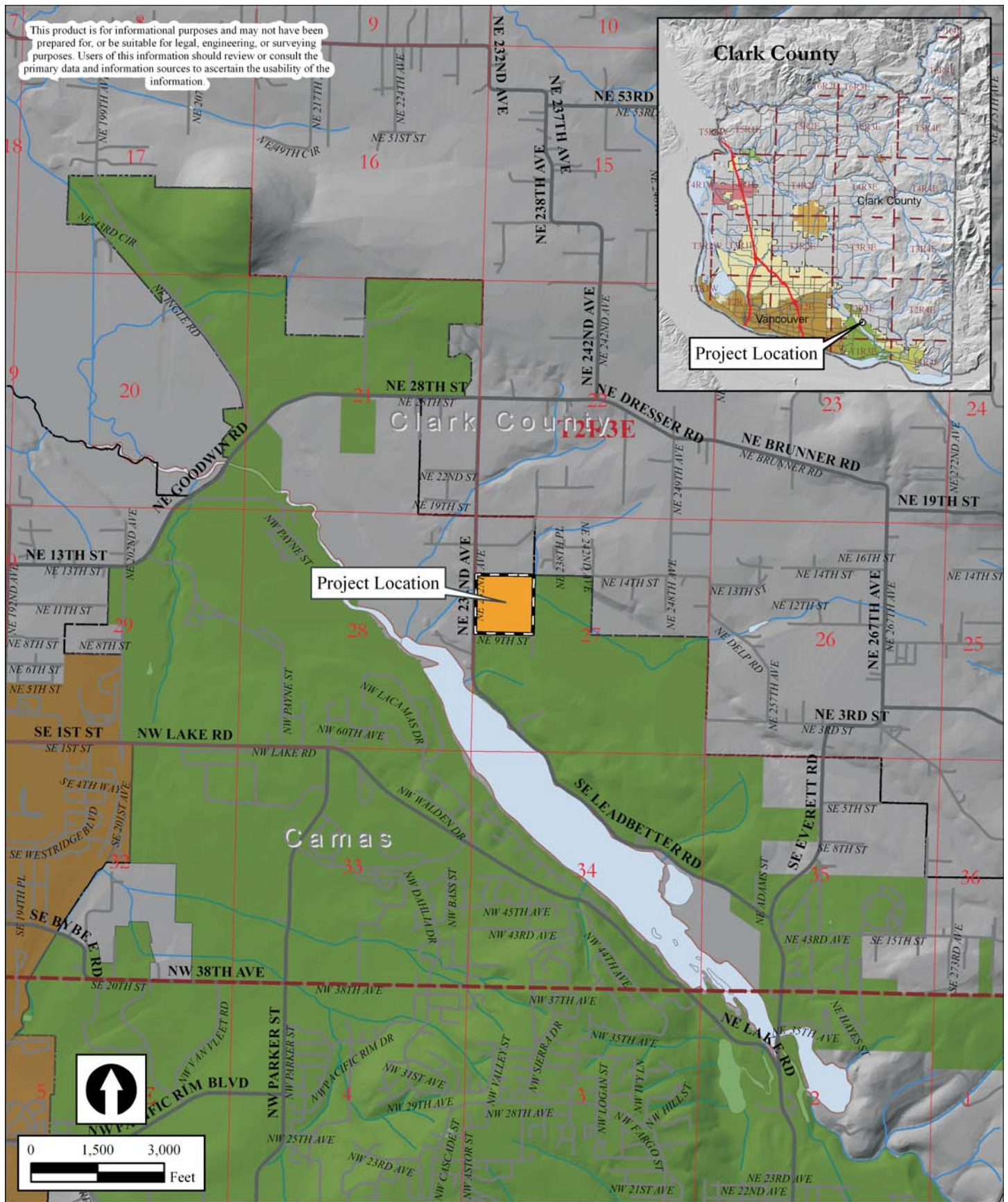
FIGURE 3 – CLARK COUNTY LIDAR TOPOGRAPHIC MAP

FIGURE 4 – EXISTING PRIORITY HABITATS

FIGURE 5 – RIPARIAN BUFFER REDUCTION/COMPENSATION AREAS

FIGURE 6 – OREGON WHITE OAK REMOVAL/COMPENSATION

PHOTO-SHEET 1 – PHOTOGRAPHS OF PROJECT AREA



Project: Lacamas Heights Elementary School

APPLICANT:
Camas School District
841 NE 22nd Avenue
Camas, WA 98607

PURPOSE: Habitat Mitigation Plan

Project Location Map
Lacamas Heights Elementary School
Camas, Washington

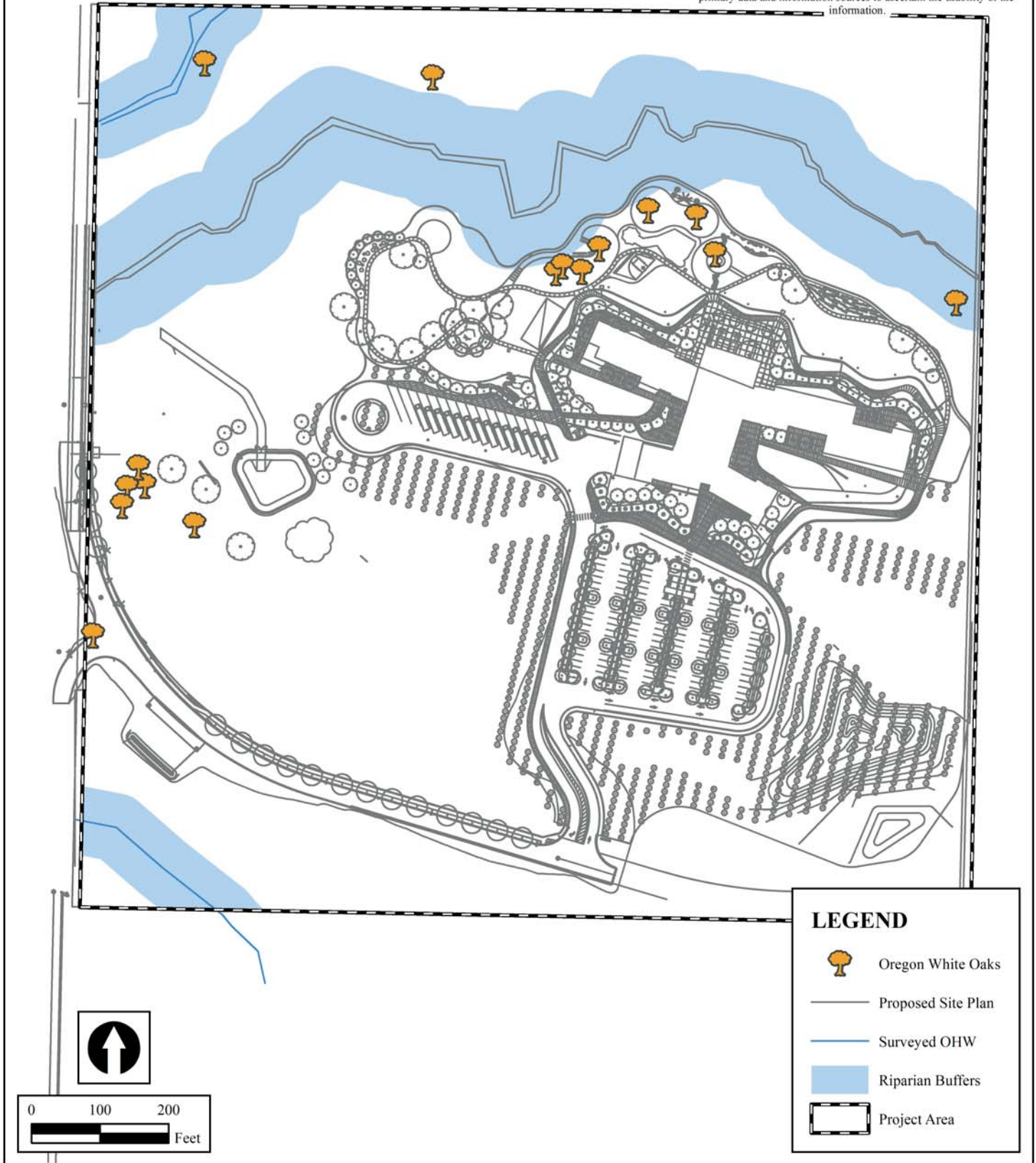


The Resource Company, Inc.

ENVIRONMENTAL SERVICES • GIS • HABITAT RESTORATION
8416 N.E. 8th Avenue, Vancouver, WA 98666 ph: 360.693.4555 fax: 360.699.6242

PROPOSED ACTIVITIES IN:
Lacamas Creek Watershed
LEGAL: NW ¼ of Section 27, T2N, R3E, WM.,
NEAR: Camas, Washington
COUNTY: Clark County
DATE: December 22, 2016
Figure 1

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



Project: Lacamas Heights Elementary School

APPLICANT:

Camas School District
841 NE 22nd Avenue
Camas, WA 98607

PURPOSE: Habitat Mitigation Plan

Proposed Site Plan
Lacamas Heights Elementary School
Camas, Washington

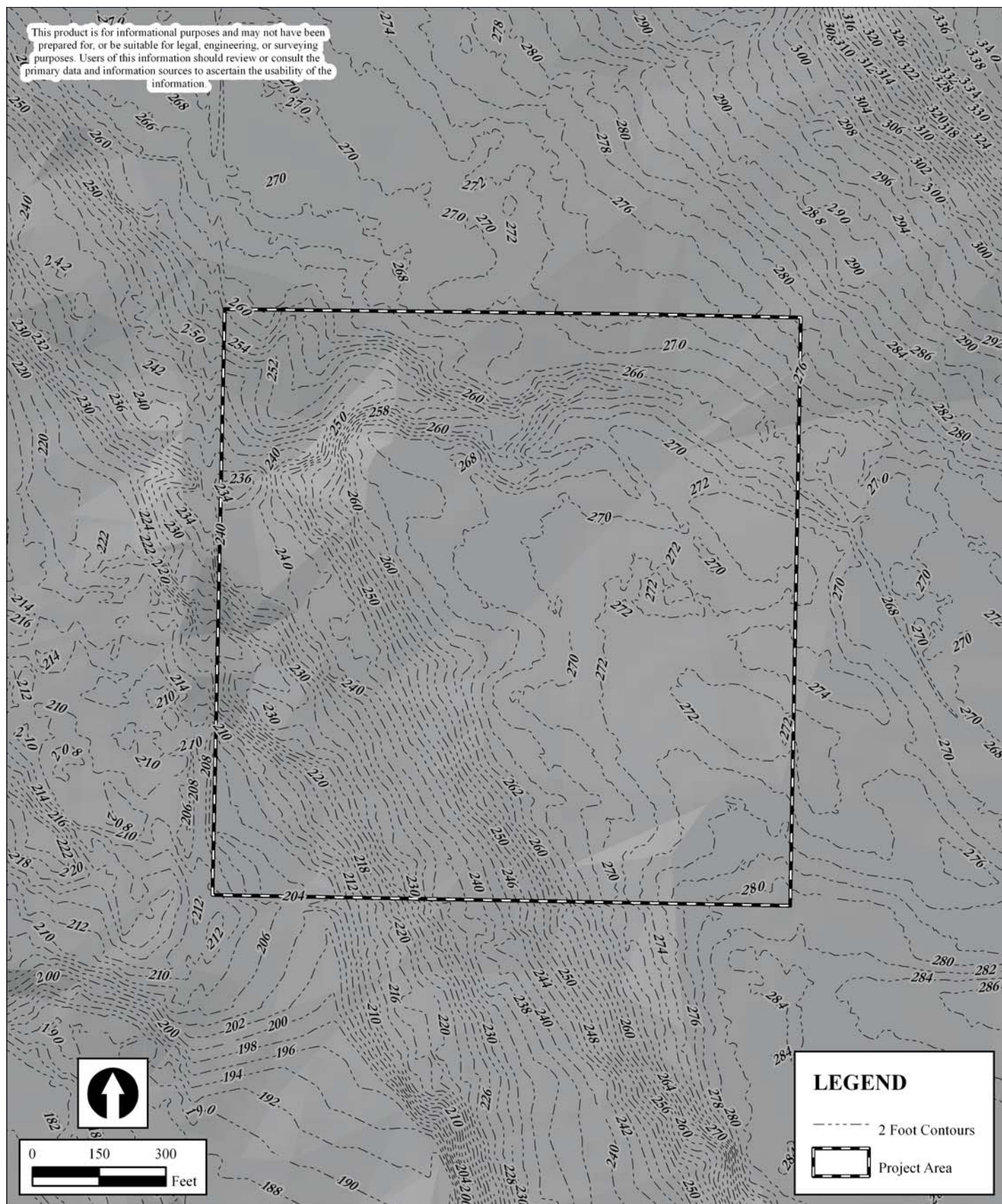


The Resource Company, Inc.

ENVIRONMENTAL SERVICES • GIS • HABITAT RESTORATION
8416 N.E. 8th Avenue, Vancouver, WA 98666 ph: 360.693.4555 fax: 360.699.6242

PROPOSED ACTIVITIES IN:
Lacamas Creek Watershed
LEGAL: NW ¼ of Section 27, T2N, R3E, WM.,
NEAR: Camas, Washington
COUNTY: Clark County
DATE: December 22, 2016
Figure 2

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information



Project: Lacamas Heights Elementary School

APPLICANT:

Camas School District
841 NE 22nd Avenue
Camas, WA 98607

PURPOSE: Habitat Mitigation Plan

Clark County LiDAR Topography
Lacamas Heights Elementary School
Camas, Washington



The Resource Company, Inc.

ENVIRONMENTAL SERVICES • GIS • HABITAT RESTORATION
8416 N.E. 8th Avenue, Vancouver, WA 98666 ph: 360.693.4555 fax: 360.699.6242

PROPOSED ACTIVITIES IN:

Lacamas Creek Watershed
LEGAL: NW ¼ of Section 27, T2N, R3E, WM.,

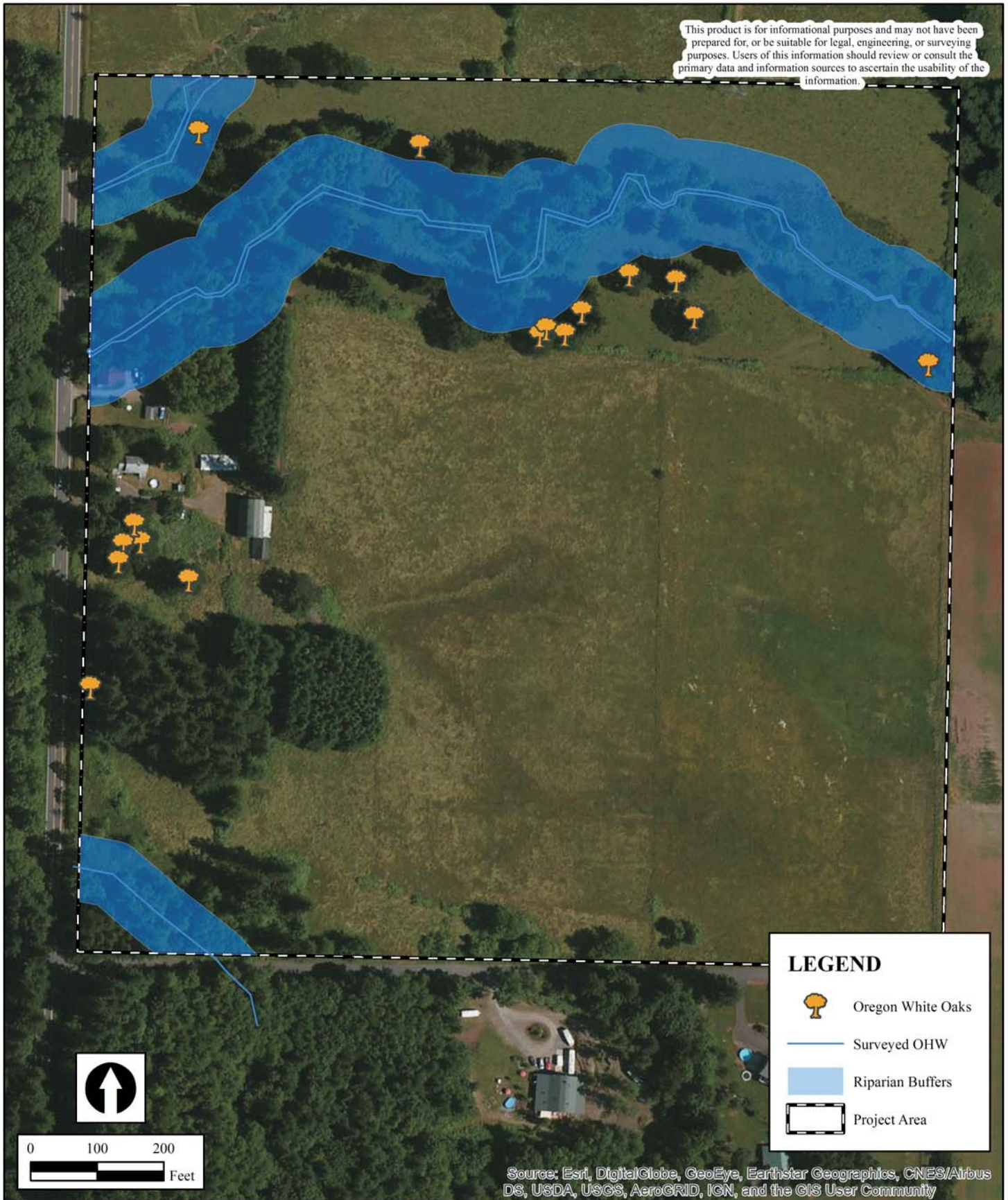
NEAR: Camas, Washington

COUNTY: Clark County





DATE: December 22, 2016

Figure 3

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



LEGEND

-  Oregon White Oaks
-  Surveyed OHW
-  Riparian Buffers
-  Project Area

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

Project: Lacamas Heights Elementary School

APPLICANT:

Camas School District
841 NE 22nd Avenue
Camas, WA 98607

PURPOSE: Habitat Mitigation Plan

Existing Priority Habitats Lacamas Heights Elementary School Camas, Washington



The Resource Company, Inc.
ENVIRONMENTAL SERVICES • GIS • HABITAT RESTORATION
8416 N.E. 8th Avenue, Vancouver, WA 98666 ph: 360.693.4555 fax: 360.699.6242

PROPOSED ACTIVITIES IN:

Lacamas Creek Watershed
LEGAL: NW ¼ of Section 27, T2N, R3E, WM.,

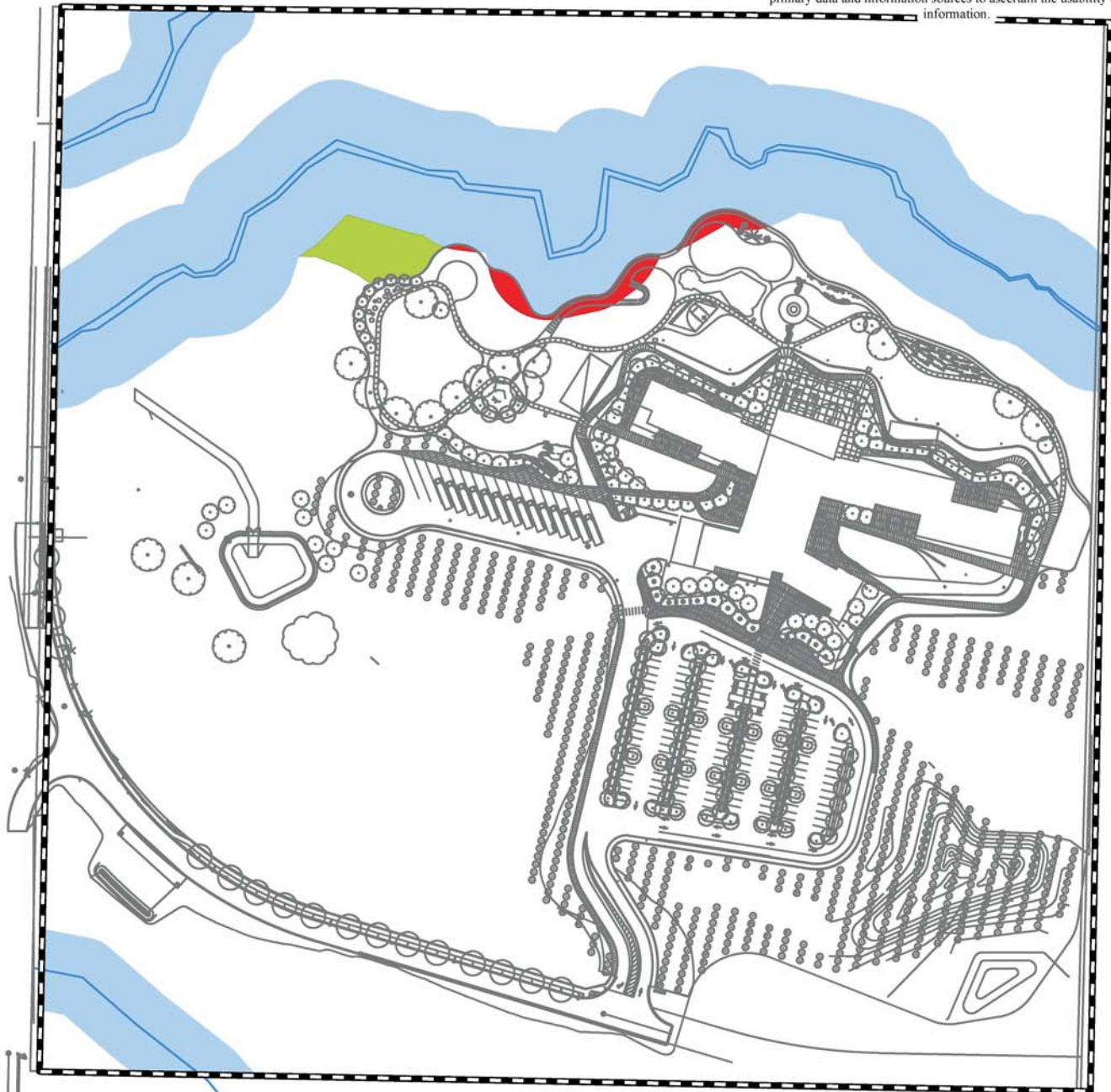
NEAR: Camas, Washington

COUNTY: Clark County

DATE: December 22, 2016

Figure 4

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



LEGEND

- Proposed Site Plan
- Riparian Buffers
- Compensation Area - 8,250 sq. ft.
- Reduction Area - 6,900 sq. ft.
- Project Area

Project: Lacamas Heights Elementary School

APPLICANT:
Camas School District
841 NE 22nd Avenue
Camas, WA 98607

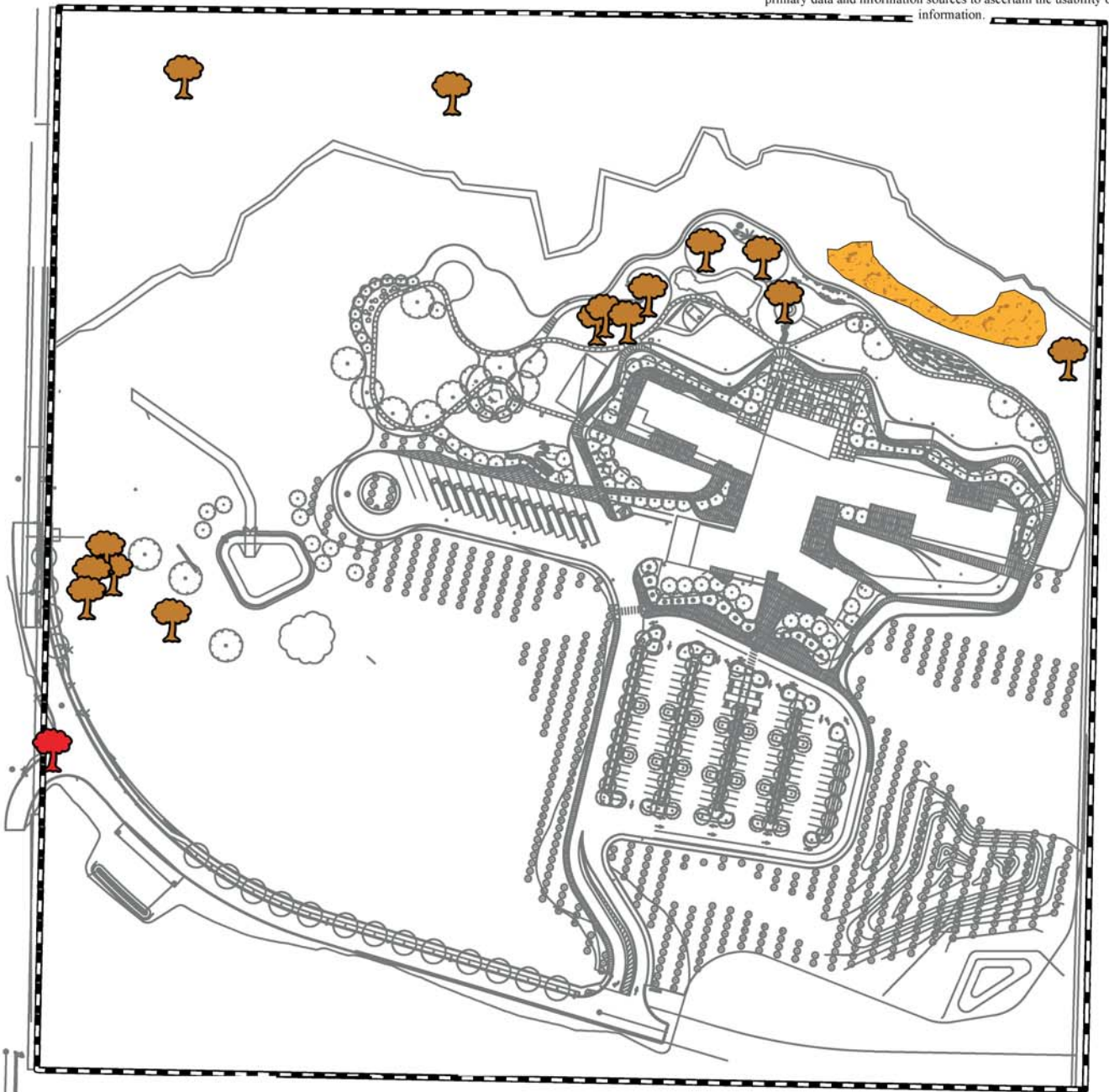
PURPOSE: Habitat Mitigation Plan

Riparian Buffer Reduction/Compensation Areas
Lacamas Heights Elementary School
Camas, Washington



PROPOSED ACTIVITIES IN:
Lacamas Creek Watershed
LEGAL: NW ¼ of Section 27, T2N, R3E, WM.,
NEAR: Camas, Washington
COUNTY: Clark County
DATE: December 22, 2016
Figure 5

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



LEGEND

— Proposed Site Plan

--- Project Area



Preserved Oaks - 15



Proposed Oak Removal - 1 (canopy cover = 2,045 sq. ft.)



Proposed Oak Planting Area - 10,225 sq. ft.

Project: Lacamas Heights Elementary School

APPLICANT:

Camas School District
841 NE 22nd Avenue
Camas, WA 98607

PURPOSE: Habitat Mitigation Plan

**Oregon White Oak Removal/Compensation
Lacamas Heights Elementary School
Camas, Washington**



The Resource Company, Inc.

ENVIRONMENTAL SERVICES • GIS • HABITAT RESTORATION
8416 N.E. 8th Avenue, Vancouver, WA 98666 ph: 360.693.4555 fax: 360.699.6242

PROPOSED ACTIVITIES IN:

Lacamas Creek Watershed
LEGAL: NW ¼ of Section 27, T2N, R3E, WM.,

NEAR: Camas, Washington

COUNTY: Clark County

DATE: December 22, 2016

Figure 6



Project: Lacamas Heights Elementary School

APPLICANT:

Camas School District
841 NE 22nd Avenue
Camas, WA 98607

PURPOSE: Habitat Mitigation Plan

**Photographs of Project Area
Lacamas Heights Elementary School
Camas, Washington**



**The Resource
Company, Inc.**

ENVIRONMENTAL SERVICES • GIS • HABITAT RESTORATION
8416 N.E. 8th Avenue, Vancouver, WA 98666 ph: 360.693.4555 fax: 360.699.6242

PROPOSED ACTIVITIES IN:
Lacamas Creek Watershed
LEGAL: NW ¼ of Section 27, T2N, R3E, WM.,
NEAR: Camas, Washington
COUNTY: Clark County
DATE: December 22, 2016
Photo Sheet 1