

**SECTION 11 – PRELIMINARY MITIGATION PLAN**

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# **Lacamas Heights Elementary School**

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## **UPDATED - PRELIMINARY WETLAND MITIGATION PLAN**

Camas, Washington



Prepared for:

Camas School District  
841 N.E. 22<sup>nd</sup> Avenue  
Camas, WA 98607

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February 28, 2017



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## UPDATED PRELIMINARY WETLAND MITIGATION PLAN

**Project:** Lacamas Heights Elementary School  
**Applicant:** Camas School District  
**Location:** 1111 N.E. 232<sup>nd</sup> 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  
**Site Visit(s):** April 30, May 30 & June 20, 2014 & March 28, 2016  
**Revised Wetland Delineation Report Date:** March 29, 2016  
**Preliminary Wetland Mitigation Report Date:** October 24, 2016  
**Update Plan Date:** November 28, 2016  
**Latest Plan Update:** February 28, 2017  
**Prepared by:** Kevin Grosz, PWS & Eli Schmitz

### 1.0 INTRODUCTION

This report details an updated preliminary wetland mitigation plan for the Lacamas Heights Elementary School prepared by The Resource Company (TRC) for the Camas School District (Applicant). The project is located at 1111 N.E. 232<sup>nd</sup> Avenue, Camas, Washington (Fig. 1). The Applicant is proposing the construction of an elementary school and associated infrastructure on the 40-acre site as shown in Figure 2. The property has historically been used for agricultural purposes, primarily domestic livestock grazing and hayland. The site is within the Lacamas Creek watershed and contains six wetlands that are described Section 2.1 below. Six wetlands on-site were delineated by TRC in 2014 and 2016. A revised wetland delineation report dated March 29, 2016, describes the results of the wetland delineation. The Applicant is proposing to reduce wetland buffers and the indirect impact to wetlands four of the six wetlands for the construction of the site. These activities are regulated under the Camas Municipal Code (CMC) 16.53 – which provides guidelines for development on or adjacent to wetlands. In addition to the wetlands, the site contains three streams and Oregon white oak (*Quercus garryana*) which are scattered throughout the site. These priority habitats are described in the habitat assessment dated July 7, 2014 prepared by TRC. This revised plan addresses the removal of the proposed stormwater facility north of Wetland A and removing the buffer/wetland enhancement area north of Wetland A for the future road widening in that area.

## **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. The property predominantly slopes from northeast to southwest (Fig. 3). The majority of the study area is open grassland plant community with a band of trees near the northern and western property lines. The wetland delineation identified six wetlands that occur across the site as shown in Figure 4. The wetlands were rated according to Washington State Department of Ecology's (Ecology) rating system for western Washington. Wetland ratings are shown in Table 1. A description of these wetlands and non-wetlands follows:

### **2.1 WETLANDS (FIG. 4)**

#### Wetland A (1.03 ac.) (Fig. 4)

Wetland A is a depressional hydrogeomorphic (HGM) class wetland that occurs in the southwest corner of the study area. A perennial stream flows through the southern portion of the wetland. This wetland contains forest and emergent plant communities with a sparse shrub layer. The forest plant community is dominated by Oregon ash (*Fraxinus latifolia* – FACW) and willow (*Salix* spp. – FAC). The shrub layer is predominantly Oregon ash saplings. Ground cover in the southern portion of the wetland is dominated by skunk cabbage (*Lysichiton americanus* – OBL), reed canarygrass (*Phalaris arundinacea* – FACW), soft rush (*Juncus effuses* – FACW), and creeping buttercup (*Ranunculus repens* – FAC). Vegetation along the northern edge of the wetland is predominantly reed canarygrass, soft rush, field horsetail (*Equisetum arvense* – FAC), Kentucky bluegrass (*Poa pratensis* – FAC), and Himalayan blackberry (*Rubus ameniacus* – FAC). Hydric soil is indicated by a depleted matrix. Wetland hydrology indicators include water at 6 inches below the surface, soil saturation at the surface and the presence of oxidized rhizospheres. This wetland rated as a Category III wetland (See Table 1). Based on the habitat score and proposed high intensity land-use (CMC Table 16.53.040-3) the buffer for this wetland is 150 feet.

#### Wetlands B (0.83 ac. - onsite), C (0.2 ac.) & F (0.16 ac.) (Fig. 4)

Wetlands B and C both meet the criteria of a slope hydrogeomorphic (HGM) wetland class. Wetland B extends off-site to the east. Wetland F is a HGM depressional wetland. These wetlands are all similar in vegetation, soils and hydrology therefore they are described together. The wetlands are palustrine emergent, temporarily/seasonally inundated (PEMF/C) wetlands. Vegetation in the wetlands is dominated by reed canarygrass, velvetgrass (*Holcus lanatus* – FAC), tall false ryegrass (*Schedonorus arundinacea* – FAC), meadow foxtail (*Alopecurus pratensis* – FACW), timothy (*Phleum pretense* – FAC), western buttercup (*Ranunculus occidentalis* – FACW), and daggerleaf rush (*Juncus ensifolius* – FACW). Hydric soil is indicated by a depleted matrix. Wetland hydrology appears to be seasonal saturation and/or temporary inundation. Oxidized rhizospheres were found along living root channels. A spring box was excavated at the upper end (east) of wetland C. It appears that this spring box was used to water livestock

at some point, however, that use has been abandoned. Wetlands B, C and F all rated as Category III wetlands according to the Western Washington Wetland Rating Form (WRF) (Table 1). Wetlands B and C have a base buffer width of 135 feet and Wetland F is protected by a base buffer width of 120 feet based on habitat function and land-use intensity (CMC Table 16.53.040-3).

#### Wetlands D (0.28 ac.) and E (0.75 ac.) (Fig. 4)

Wetlands D and E are slope HGM class wetlands located on the north side of the Type F stream on the northern portion of the property (Fig. 4). The stream forms the southern border of these wetlands. Vegetation is dominated by a red-osier dogwood (*Cornus alba* – FACW) and vine maple (*Acer circinatum* – FAC) shrub layer. The herbaceous layer is predominantly reed canarygrass, creeping buttercup, and skunk cabbage. Blackberry (*Rubus* spp.) patches occur throughout these wetland areas. Hydric soils are depicted by a depleted matrix. These wetlands are hillside seeps (groundwater discharge) that are temporarily to seasonally saturated or inundated. Wetlands D and E rated as Category III wetlands (Table 1). These wetlands are protected by a base buffer width of 150 feet as per CMC Table 16.53.040-3.

**Table 1. Wetland Function Rating**

| Wetland | Wetland Type | Water Quality Functions | Hydrologic Functions | Habitat Functions | Total Score | Wetland Category | Buffer Width High Intensity Land-Use |
|---------|--------------|-------------------------|----------------------|-------------------|-------------|------------------|--------------------------------------|
| A       | Depressional | 7                       | 5                    | 7                 | 19          | III              | 150'                                 |
| B       | Depressional | 7                       | 5                    | 6                 | 18          | III              | 135'                                 |
| C       | Slope        | 6                       | 4                    | 6                 | 16          | III              | 135'                                 |
| D       | Slope        | 5                       | 5                    | 7                 | 17          | III              | 150'                                 |
| E       | Slope        | 6                       | 4                    | 7                 | 17          | III              | 150'                                 |
| F       | Depressional | 6                       | 5                    | 5                 | 16          | III              | 120'                                 |

## **2.2 NON-WETLANDS (Fig. 3)**

The majority of the site is an open grassland plant community. A forest community occurs along the northern and western portion of the site. Vegetation in the grassland community is dominated by orchardgrass (*Dactylis glomerata* – FAC), vernalgrass (*Anthoxanthum odoratum* – FAC), velvetgrass, tall fescue, and timothy. Vegetation in the forested portions of the site consists of a Douglas fir (*Psuedotsuga menziesii* – FACU) tree layer. The shrub layer is sparse but consists of hazelnut (*Corylus cornuta* – FACU), vine maple and oso-berry (*Oemleria cerasiformis* – FACU). Ground cover is dominated by orchardgrass, bull thistle (*Cirsium vulgare* – FACU), tansy ragwort (*Senecio jacobaea* – UPL), and large patches of blackberries. No hydric soil or wetland hydrology indicators were observed in upland portions of the property. The three streams and their associated

buffers and the Oregon white oak (Fig. 4) are priority habitats that are protected by the City under CMC 16.61 – Fish and Wildlife Habitat Conservation Areas.

### **3.0 MITIGATION SEQUENCING**

According to CMC 16.53.050(D)(a-c) applicants must demonstrate that alternative site designs have been considered that avoid and/or minimize wetland impacts. The Applicant has considered several project configurations and has designed the project to avoid all direct impacts to the 3.25 acres of on-site wetlands (Fig. 2). However, the project contains priority habitats (riparian buffers & Oregon white oak) and cultural resources (see AINW reports) that restrict development of the site. In order to avoid and minimize impacts to these critical areas, the Applicant has designed the project to reduce buffers as allowed in CMC 16.53.050(C) (Figs. 5 & 6) and indirectly impact a total of 0.92 acres (Table 2) of five of the wetlands. These indirect impacts and compensation for the impacts are outlined below in Sections 5 and 6 of this report.

**Table 2. Proposed Wetland Indirect Impacts (Fig. 7).**

| <b>Wetland Identifier</b> | <b>Wetland Area (ft²) On-site</b> | <b>Permanently Filled Wetland Area (ft²)</b> | <b>Temporarily Impacted Wetland Area (ft²)</b> | <b>Indirect Impact Area (ft²)</b> | <b>Cowardin Classification</b> | <b>Ecology Rating</b> | <b>Local Jurisdiction Rating</b> | <b>HGM Classification</b> |
|---------------------------|-----------------------------------|----------------------------------------------|------------------------------------------------|-----------------------------------|--------------------------------|-----------------------|----------------------------------|---------------------------|
| A                         | 44,867                            | 0                                            | 0                                              | 21,410                            | PFOC                           | III                   | III                              | Depressional              |
| B                         | 36,155                            | 0                                            | 0                                              | 7,380                             | PEMC                           | III                   | III                              | Depressional              |
| C                         | 8,712                             | 0                                            | 0                                              | 4,250                             | PEMA                           | III                   | III                              | Slope                     |
| D                         | 12,197                            | 0                                            | 0                                              | 0                                 | PSSA                           | III                   | III                              | Slope                     |
| E                         | 32,670                            | 0                                            | 0                                              | 0                                 | PSSA                           | III                   | III                              | Slope                     |
| F                         | 6,970                             | 0                                            | 0                                              | 6,920                             | PEMA                           | III                   | III                              | Depressional              |
| <b>TOTALS</b>             | <b>141,571</b>                    | <b>0</b>                                     | <b>0</b>                                       | <b>39,960</b>                     |                                |                       |                                  |                           |

The following additional measures will be taken to avoid/minimize additional impacts to wetland and buffer areas:

1. The outer extent of wetland buffers, and other critical area buffer boundaries will be demarcated and the demarcation will be maintained throughout the duration of the construction period. This temporary demarcation material will be removed once construction is completed.
2. Erosion control measures (e.g. straw bale sediment barriers or sediment fence) will be installed to prevent siltation from occurring in the critical areas during construction.
3. The erosion control measures will be removed once construction is completed and vegetation has become established.
4. The final wetland and buffer configuration will be placed in a conservation covenant that will restrict use and access to the critical areas.

#### **4.0 BUFFER REDUCTION ACTIVITIES (FIGS. 5 & 6)**

The Applicant is proposing to reduce the buffers along Wetlands B, C, D, E, and F through shielding of light and noise as allowed under CMC 16.53.050 (C)(1)(a)(i-ii). The shielding will consist directing all lights from the buildings, roadways, parking lots, and playfields away from the wetlands. In addition, the proposed buffer enhancement tree and shrub plantings will moderate noise from the project area into the wetlands. Through this action the wetland buffers will be reduced from the high intensity land-use buffer to the moderate land-use intensity as shown in Figure 5 and given in Table 3.

The outer edge of the buffers for Wetlands B, C, and F will be further reduced by 25 percent through enhancement of the inner 75 percent of the buffer as allowed under CMC 16.53.050(C)(b & c) (Fig. 6, Table 3). Currently, these areas are predominantly an open grassland plant community that consists of non-native herbaceous species. The enhancement by planting native trees and shrubs and placement of habitat features (snags, large woody debris, bat boxes) will provide increased habitat functions over existing conditions as these proposed forested/shrub areas mature. The total buffer reduction areas through enhancement are 34,828 ft<sup>2</sup> (Fig. 6). The buffer enhancement will consist of planting 101,750 ft<sup>2</sup> of buffer areas as shown in Figure 6. This will include planting the indirect wetland impact areas that are outlined in Sections 5 and 6. Planting plan details for the enhancement are outlined in Section 9.

The combined reductions through shielding and enhancement will not reduce the buffer widths for Category III to less than 50 feet.

**Table 3. Buffer Width Reduction through Shielding (Fig. 5) & Enhancement (Fig. 6)**

| <b>Wetland</b> | <b>Wetland Type</b> | <b>Wetland Category</b> | <b>High Intensity Land-Use Buffer Width</b> | <b>Moderate Intensity Land-Use Buffer Width</b> | <b>Enhanced Buffer Final Buffer Width</b> |
|----------------|---------------------|-------------------------|---------------------------------------------|-------------------------------------------------|-------------------------------------------|
| A              | Depressional        | III                     | 150'                                        | No Reduction                                    | No Reduction                              |
| B              | Depressional        | III                     | 135'                                        | 100'                                            | 75'                                       |
| C              | Slope               | III                     | 135'                                        | 100'                                            | 75'                                       |
| D              | Slope               | III                     | 150'                                        | 110'                                            | No Reduction                              |
| E              | Slope               | III                     | 150'                                        | 110'                                            | No Reduction                              |
| F              | Depressional        | III                     | 120'                                        | 90'                                             | 67.7'                                     |

#### **5.0 INDIRECT WETLAND IMPACTS**

No direct wetland impacts are proposed for this project. However, due to the constraints of the priority species (Oregon white oak) and cultural resources on this site, the Applicant is proposing to indirectly impact four (4) of the six (6) wetlands as shown in

Figure 7 and given in Table 4. CMC 16.53 requires minimum buffer widths to protect wetland functions, therefore to maintain the buffer width, buffers will be extended into the wetland which in theory is an indirect impact to the wetlands. No fill or excavation will occur within the wetland boundary of any of the six wetlands. Without the proposed indirect wetland impacts the school with its associated infrastructure cannot be constructed on the site.

**Table 4. Wetland Impacts and Mitigation Accounting**

| Wetland          | Wetland Area On-site (ft <sup>2</sup> ) | Impact Type      | Impacts (ft <sup>2</sup> ) | Compensation Type (ft <sup>2</sup> ) |              |                   |            |
|------------------|-----------------------------------------|------------------|----------------------------|--------------------------------------|--------------|-------------------|------------|
|                  |                                         |                  |                            | Creation/Ratio                       |              | Enhancement/Ratio |            |
| A - Category III | 44,867                                  | In-Direct        | 10,050                     | 5,025                                | 0.5:1        | 20,100            | 2:1        |
|                  |                                         | In-Direct        | 11,360                     | 11,360                               | 1:1          | --                | --         |
| B - Category III | 36,155                                  | In-Direct        | 7,380                      | 3,690                                | 0.5:1        | 14,760            | 2:1        |
| C - Category III | 8,712                                   | In-Direct        | 4,250                      | 2,125                                | 0.5:1        | 8,500             | 2:1        |
| D - Category III | 12,197                                  | In-Direct        | 0                          | 0.00                                 | --           | --                | --         |
| E - Category III | 32,670                                  | In-Direct        | 0                          | 0.00                                 | --           | --                | --         |
| F - Category III | 6,970                                   | In-Direct        | 6,920                      | 3,460                                | 0.5:1        | 13,840            | 2:1        |
| <b>Totals</b>    | <b>141,571</b>                          | <b>In-Direct</b> | <b>39,960</b>              | <b>25,660</b>                        | <b>0.5:1</b> | <b>57,200</b>     | <b>2:1</b> |

## 6.0 MITIGATION ACTIVITIES

The Applicant is proposing to indirectly impact four of the six onsite wetlands (Fig. 7, Table 1). The total indirect wetland impact to these wetlands is 39,960 ft<sup>2</sup> (Tables 2 & 4), Fig. 7). To compensate for these indirect impacts (Fig. 7), the Applicant is proposing a combination of wetland creation plus enhancement and creation as allowed per CMC 16.53.050(D). Table 16.53.050-1 sets the standard wetland mitigation ratios. For Category III wetlands the compensation ratio for using the combination formula is 1:1 creation and 4:1 enhancement and 2:1 for just creation. For indirect wetland impacts, Ecology has allowed the mitigation ratios to be reduced by one-half on recent mitigation plans prepared by TRC. Therefore, the proposed ratios for the indirect impacts for this project are 0.5:1 creation plus 2:1 enhancement for the combination of this type mitigation and 1:1 for just creation. The mitigation for this project will be achieved as shown in Figure 8 and detailed as follows:

### Creation (0.5:1) + Enhancement (2:1) and Creation (1:1) (Table 4, Fig. 8)

The proposed combination of creation and enhancement will consist of the enhancement of 28,560 ft<sup>2</sup> of Wetland B, 4,950 ft<sup>2</sup> of Wetland C, 22,060 ft<sup>2</sup> of Wetland E and 1,630 ft<sup>2</sup> of Wetland F which totals 57,200 ft<sup>2</sup> of enhancements plus 14,300 ft<sup>2</sup> of creation (Fig. 8, Table 4). The proposed combination of enhancement plus creation accounts for 28,600 ft<sup>2</sup> of the indirect wetland impacts. The remaining 11,360 ft<sup>2</sup> of indirect wetland impact will be compensated through creation of 11,360 ft<sup>2</sup> (1:1) of wetlands. The proposed wetland creation area is located between Wetlands B and F as shown in Figure 8. A total of 57,200 ft<sup>2</sup> of wetland enhancement and 25,660 ft<sup>2</sup> of wetland creation will be applied to mitigate for the 39,960 ft<sup>2</sup> of indirect impacts to the Category III wetlands for this project.

## **7.0 MITIGATION GOALS & OBJECTIVES**

The overall objective of this plan is to ensure no net loss of wetland functions and values within the watershed, and satisfy the requirements the CMC 16.53. The Category III indirect wetland impacts will be compensated through a combination of creation and enhancement as outlined above. The objectives of the wetland mitigation are as follows:

**Objective #1** The proposed mitigation will compensate for the indirect wetland impact areas of 39,960 ft<sup>2</sup> (Table 1) by enhancing 57,200 ft<sup>2</sup> of Wetlands B, C, E and F and the creation of 25,660 ft<sup>2</sup> of wetlands from existing upland between Wetlands B and F (Fig. 8).

**Objective #2** Compensatory mitigation will improve plant diversity by planting a total of 101,750 ft<sup>2</sup> of wetland buffer, 57,200 ft<sup>2</sup> of wetland enhancement and 25,660 ft<sup>2</sup> of wetland creation areas with native trees and shrubs. The predominantly open grassland wetlands will be replaced by native forest and shrub communities at maturity.

**Objective #3** The compensatory mitigation will improve wetland functions through increasing the diversity and complexity of available wildlife habitat. The proposed project would ultimately provide a diversity of tree, shrub and ground cover habitat that will provide the opportunity for increased wildlife use.

## **8.0 PROJECT SCHEDULE**

This project is proposed to begin construction as soon as the appropriate permits are received. Initial project grading and direct/indirect wetland impacts are tentatively scheduled to begin in the spring of 2017. Wetland enhancement/creation activities will take place during the first planting season following wetland impacts.

## **9.0 PLANTING PLAN**

To mitigate for the impacts described above the Applicant proposes to complete the following mitigation measures. The wetland and buffer enhancement and wetland creation areas will be planted with native tree and shrub species at a ratio of 5 trees/10 shrubs per 1,000 ft<sup>2</sup>. The proposed wetland buffer and wetland enhancement and creation areas plant species and numbers are outlined in Tables 5 and 6 below:

**Table 5. Wetland Buffer Enhancement Area Plant & Planting Specification (Fig. 6).**

| Species                                                                        | Plant Form | Minimum Size | Minimum Spacing | Required Number |
|--------------------------------------------------------------------------------|------------|--------------|-----------------|-----------------|
| <b>Wetland B Buffer Enhancement Area – Wetland Area (7,365 ft<sup>2</sup>)</b> |            |              |                 |                 |
| <b>Shrubs</b>                                                                  |            |              |                 |                 |
| Black twinberry<br>( <i>Lonicera involucrata</i> )                             | Bare Root  | 24 - 36"     | 6'              | 14              |
| Nootka rose<br>( <i>Rosa nutkana</i> )                                         | Bare Root  | 24 - 36"     | 6'              | 25              |
| Scouler's willow<br>( <i>Salix</i> spp.)                                       | Bare Root  | 24 - 36"     | 6'              | 25              |

|                                                                                |           |          |    |            |
|--------------------------------------------------------------------------------|-----------|----------|----|------------|
| Red-osier dogwood<br>( <i>Cornus alba</i> )                                    | Bare Root | 24 - 36" | 6' | 10         |
| <b>Total Shrubs</b>                                                            |           |          |    | <b>74</b>  |
| <b>Trees</b>                                                                   |           |          |    |            |
| Oregon ash<br>( <i>Fraxinus latifolia</i> )                                    | Bare Root | 24 - 36" | 6' | 20         |
| Quaking aspen<br>( <i>Populus tremuloides</i> )                                | Bare Root | 24 - 36" | 6' | 10         |
| Pacific cascara<br>( <i>Rhamnus purshiana</i> )                                | Bare Root | 24 - 36" | 6' | 7          |
| <b>Total Trees</b>                                                             |           |          |    | <b>37</b>  |
| <b>Wetland B Buffer Enhancement Area – Upland Area (24,670 ft<sup>2</sup>)</b> |           |          |    |            |
| <b>Shrubs</b>                                                                  |           |          |    |            |
| Hazelnut<br>( <i>Corylus cornuta</i> )                                         | Bare Root | 24 - 36" | 6' | 15         |
| Oregon Grape<br>( <i>Mahonia aquifolium</i> )                                  | Bare Root | 24 - 36" | 6' | 29         |
| Nootka rose<br>( <i>Rosa nutkana</i> )                                         | Bare Root | 24 - 36" | 6' | 60         |
| Scouler's willow<br>( <i>Salix</i> spp.)                                       | Bare Root | 24 - 36" | 6' | 15         |
| Salal<br>( <i>Gaultheria shallon</i> )                                         | Bare Root | 24 - 36" | 6' | 45         |
| Snowberry<br>( <i>Symphoricarpos albus</i> )                                   | Bare Root | 24 - 36" | 6' | 70         |
| Vine Maple<br>( <i>Acer circinatum</i> )                                       | Bare Root | 24 - 36" | 6' | 12         |
| <b>Total Shrubs</b>                                                            |           |          |    | <b>246</b> |
| <b>Trees</b>                                                                   |           |          |    |            |
| Western Red Cedar<br>( <i>Thuja plicata</i> )                                  | Seedling  | 24 - 36" | 6' | 20         |
| Douglas Fir<br>( <i>Pseudotsuga menziesii</i> )                                | Seedling  | 24 - 36" | 6' | 31         |
| Oregon White Oak<br>( <i>Quercus garryana</i> )                                | Bare Root | 24 - 36" | 6' | 25         |
| Big-Leaf Maple<br>( <i>Acer macrophyllum</i> )                                 | Bare Root | 24 - 36" | 6' | 29         |
| Red Alder<br>( <i>Alnus rubra</i> )                                            | Bare Root | 24 - 36" | 6' | 18         |
| <b>Total Trees</b>                                                             |           |          |    | <b>123</b> |
| <b>Wetland C Buffer Enhancement Area – Wetland Area (3,830 ft<sup>2</sup>)</b> |           |          |    |            |
| <b>Shrubs</b>                                                                  |           |          |    |            |
| Black twinberry<br>( <i>Lonicera involucrata</i> )                             | Bare Root | 24 - 36" | 6' | 9          |
| Nootka rose<br>( <i>Rosa nutkana</i> )                                         | Bare Root | 24 - 36" | 6' | 11         |
| Scouler's willow<br>( <i>Salix</i> spp.)                                       | Bare Root | 24 - 36" | 6' | 11         |

|                                                                                |           |          |    |            |
|--------------------------------------------------------------------------------|-----------|----------|----|------------|
| Red-osier dogwood<br>( <i>Cornus alba</i> )                                    | Bare Root | 24 - 36" | 6' | 8          |
| <b>Total Shrubs</b>                                                            |           |          |    | <b>38</b>  |
| <b>Trees</b>                                                                   |           |          |    |            |
| Oregon ash<br>( <i>Fraxinus latifolia</i> )                                    | Bare Root | 24 - 36" | 6' | 11         |
| Quaking aspen<br>( <i>Populus tremuloides</i> )                                | Bare Root | 24 - 36" | 6' | 5          |
| Pacific cascara<br>( <i>Rhamnus purshiana</i> )                                | Bare Root | 24 - 36" | 6' | 3          |
| <b>Total Trees</b>                                                             |           |          |    | <b>19</b>  |
| <b>Wetland C Buffer Enhancement Area – Upland Area (34,145 ft<sup>2</sup>)</b> |           |          |    |            |
| <b>Shrubs</b>                                                                  |           |          |    |            |
| Hazelnut<br>( <i>Corylus cornuta</i> )                                         | Bare Root | 24 - 36" | 6' | 40         |
| Oregon Grape<br>( <i>Mahonia aquifolium</i> )                                  | Bare Root | 24 - 36" | 6' | 50         |
| Nootka rose<br>( <i>Rosa nutkana</i> )                                         | Bare Root | 24 - 36" | 6' | 60         |
| Scouler's willow<br>( <i>Salix</i> spp.)                                       | Bare Root | 24 - 36" | 6' | 35         |
| Salal<br>( <i>Gaultheria shallon</i> )                                         | Bare Root | 24 - 36" | 6' | 57         |
| Snowberry<br>( <i>Symphoricarpos albus</i> )                                   | Bare Root | 24 - 36" | 6' | 70         |
| Vine Maple<br>( <i>Acer circinatum</i> )                                       | Bare Root | 24 - 36" | 6' | 30         |
| <b>Total Shrubs</b>                                                            |           |          |    | <b>342</b> |
| <b>Trees</b>                                                                   |           |          |    |            |
| Western Red Cedar<br>( <i>Thuja plicata</i> )                                  | Seedling  | 24 - 36" | 6' | 20         |
| Douglas Fir<br>( <i>Pseudotsuga menziesii</i> )                                | Seedling  | 24 - 36" | 6' | 30         |
| Oregon White Oak<br>( <i>Quercus garryana</i> )                                | Bare Root | 24 - 36" | 6' | 40         |
| Big-Leaf Maple<br>( <i>Acer macrophyllum</i> )                                 | Bare Root | 24 - 36" | 6' | 50         |
| Red Alder<br>( <i>Alnus rubra</i> )                                            | Bare Root | 24 - 36" | 6' | 31         |
| <b>Total Trees</b>                                                             |           |          |    | <b>171</b> |
| <b>Wetland F Buffer Enhancement Area – Wetland Area (6,905 ft<sup>2</sup>)</b> |           |          |    |            |
| <b>Shrubs</b>                                                                  |           |          |    |            |
| Black twinberry<br>( <i>Lonicera involucrata</i> )                             | Bare Root | 24 - 36" | 6' | 6          |
| Nootka rose<br>( <i>Rosa nutkana</i> )                                         | Bare Root | 24 - 36" | 6' | 37         |
| Scouler's willow<br>( <i>Salix</i> spp.)                                       | Bare Root | 24 - 36" | 6' | 22         |

|                                                                     |           |          |    |            |
|---------------------------------------------------------------------|-----------|----------|----|------------|
| Red-osier dogwood<br>( <i>Cornus alba</i> )                         | Bare Root | 24 - 36" | 6' | 5          |
| <b>Total Shrubs</b>                                                 |           |          |    | <b>70</b>  |
| <b>Trees</b>                                                        |           |          |    |            |
| Oregon ash<br>( <i>Fraxinus latifolia</i> )                         | Bare Root | 24 - 36" | 6' | 18         |
| Quaking aspen<br>( <i>Populus tremuloides</i> )                     | Bare Root | 24 - 36" | 6' | 11         |
| Pacific cascara<br>( <i>Rhamnus purshiana</i> )                     | Bare Root | 24 - 36" | 6' | 6          |
| <b>Total Trees</b>                                                  |           |          |    | <b>35</b>  |
| <b>Wetland F Buffer Enhancement Area – Upland Area (24,980 ft²)</b> |           |          |    |            |
| <b>Shrubs</b>                                                       |           |          |    |            |
| Hazelnut<br>( <i>Corylus cornuta</i> )                              | Bare Root | 24 - 36" | 6' | 20         |
| Oregon Grape<br>( <i>Mahonia aquifolium</i> )                       | Bare Root | 24 - 36" | 6' | 35         |
| Nootka rose<br>( <i>Rosa nutkana</i> )                              | Bare Root | 24 - 36" | 6' | 60         |
| Scouler's willow<br>( <i>Salix</i> spp.)                            | Bare Root | 24 - 36" | 6' | 30         |
| Salal<br>( <i>Gaultheria shallon</i> )                              | Bare Root | 24 - 36" | 6' | 35         |
| Snowberry<br>( <i>Symphoricarpos albus</i> )                        | Bare Root | 24 - 36" | 6' | 50         |
| Vine Maple<br>( <i>Acer circinatum</i> )                            | Bare Root | 24 - 36" | 6' | 20         |
| <b>Total Shrubs</b>                                                 |           |          |    | <b>250</b> |
| <b>Trees</b>                                                        |           |          |    |            |
| Western Red Cedar<br>( <i>Thuja plicata</i> )                       | Seedling  | 24 - 36" | 6' | 20         |
| Douglas Fir<br>( <i>Pseudotsuga menziesii</i> )                     | Seedling  | 24 - 36" | 6' | 35         |
| Oregon White Oak<br>( <i>Quercus garryana</i> )                     | Bare Root | 24 - 36" | 6' | 21         |
| Big-Leaf Maple<br>( <i>Acer macrophyllum</i> )                      | Bare Root | 24 - 36" | 6' | 31         |
| Red Alder<br>( <i>Alnus rubra</i> )                                 | Bare Root | 24 - 36" | 6' | 18         |
| <b>Total Trees</b>                                                  |           |          |    | <b>125</b> |

**Table 6. Wetland Enhancement & Creation Areas Plant & Planting Specification (Fig. 8).**

| Species                                                     | Plant Form | Minimum Size | Minimum Spacing | Required Number |
|-------------------------------------------------------------|------------|--------------|-----------------|-----------------|
| <b>Wetland B Enhancement Area – (28,560 ft<sup>2</sup>)</b> |            |              |                 |                 |
| <b>Shrubs</b>                                               |            |              |                 |                 |
| Black twinberry<br>( <i>Lonicera involucrata</i> )          | Bare Root  | 24 - 36"     | 6'              | 35              |
| Nootka rose<br>( <i>Rosa nutkana</i> )                      | Bare Root  | 24 - 36"     | 6'              | 100             |
| Scouler's willow<br>( <i>Salix</i> spp.)                    | Bare Root  | 24 – 36"     | 6'              | 94              |
| Red-osier dogwood<br>( <i>Cornus alba</i> )                 | Bare Root  | 24 - 36"     | 6'              | 20              |
| Douglas Hawthorne<br>( <i>Crataegus douglasii</i> )         | Bare Root  | 24 - 36"     | 6'              | 16              |
| Pacific ninebark<br>( <i>Physocarpus capitatus</i> )        | Bare Root  | 24 - 36"     | 6'              | 21              |
| <b>Total Shrubs</b>                                         |            |              |                 | <b>286</b>      |
| <b>Trees</b>                                                |            |              |                 |                 |
| Oregon ash<br>( <i>Fraxinus latifolia</i> )                 | Bare Root  | 24 - 36"     | 6'              | 65              |
| Quaking aspen<br>( <i>Populus tremuloides</i> )             | Bare Root  | 24 - 36"     | 6'              | 48              |
| Pacific cascara<br>( <i>Rhamnus purshiana</i> )             | Bare Root  | 24 – 36"     | 6'              | 30              |
| <b>Total Trees</b>                                          |            |              |                 | <b>143</b>      |
| <b>Wetland C Enhancement Area – (4,950 ft<sup>2</sup>)</b>  |            |              |                 |                 |
| <b>Shrubs</b>                                               |            |              |                 |                 |
| Black twinberry<br>( <i>Lonicera involucrata</i> )          | Bare Root  | 24 - 36"     | 6'              | 7               |
| Nootka rose<br>( <i>Rosa nutkana</i> )                      | Bare Root  | 24 - 36"     | 6'              | 20              |
| Scouler's willow<br>( <i>Salix</i> spp.)                    | Bare Root  | 24 – 36"     | 6'              | 15              |
| Red-osier dogwood<br>( <i>Cornus alba</i> )                 | Bare Root  | 24 - 36"     | 6'              | 8               |
| <b>Total Shrubs</b>                                         |            |              |                 | <b>50</b>       |
| <b>Trees</b>                                                |            |              |                 |                 |
| Oregon ash<br>( <i>Fraxinus latifolia</i> )                 | Bare Root  | 24 - 36"     | 6'              | 15              |
| Quaking aspen<br>( <i>Populus tremuloides</i> )             | Bare Root  | 24 - 36"     | 6'              | 5               |
| Pacific cascara<br>( <i>Rhamnus purshiana</i> )             | Bare Root  | 24 – 36"     | 6'              | 5               |
| <b>Total Trees</b>                                          |            |              |                 | <b>25</b>       |

| <b>Wetland E Enhancement Area – 22,060 ft<sup>2</sup>)</b> |           |          |    |            |
|------------------------------------------------------------|-----------|----------|----|------------|
| <b>Shrubs</b>                                              |           |          |    |            |
| Black twinberry<br>( <i>Lonicera involucrata</i> )         | Bare Root | 24 - 36" | 6' | 26         |
| Nootka rose<br>( <i>Rosa nutkana</i> )                     | Bare Root | 24 - 36" | 6' | 92         |
| Scouler's willow<br>( <i>Salix</i> spp.)                   | Bare Root | 24 - 36" | 6' | 50         |
| Red-osier dogwood<br>( <i>Cornus alba</i> )                | Bare Root | 24 - 36" | 6' | 20         |
| Douglas Hawthorne<br>( <i>Crataegus douglasii</i> )        | Bare Root | 24 - 36" | 6' | 18         |
| Pacific ninebark<br>( <i>Physocarpus capitatus</i> )       | Bare Root | 24 - 36" | 6' | 15         |
| <b>Total Shrubs</b>                                        |           |          |    | <b>221</b> |
| <b>Trees</b>                                               |           |          |    |            |
| Oregon ash<br>( <i>Fraxinus latifolia</i> )                | Bare Root | 24 - 36" | 6' | 75         |
| Quaking aspen<br>( <i>Populus tremuloides</i> )            | Bare Root | 24 - 36" | 6' | 16         |
| Pacific cascara<br>( <i>Rhamnus purshiana</i> )            | Bare Root | 24 - 36" | 6' | 19         |
| <b>Total Trees</b>                                         |           |          |    | <b>110</b> |
| <b>Wetland F Enhancement Area – (1,630 ft<sup>2</sup>)</b> |           |          |    |            |
| <b>Shrubs</b>                                              |           |          |    |            |
| Black twinberry<br>( <i>Lonicera involucrata</i> )         | Bare Root | 24 - 36" | 6' | 3          |
| Nootka rose<br>( <i>Rosa nutkana</i> )                     | Bare Root | 24 - 36" | 6' | 6          |
| Scouler's willow<br>( <i>Salix</i> spp.)                   | Bare Root | 24 - 36" | 6' | 4          |
| Red-osier dogwood<br>( <i>Cornus alba</i> )                | Bare Root | 24 - 36" | 6' | 3          |
| <b>Total Shrubs</b>                                        |           |          |    | <b>16</b>  |
| <b>Trees</b>                                               |           |          |    |            |
| Oregon ash<br>( <i>Fraxinus latifolia</i> )                | Bare Root | 24 - 36" | 6' | 4          |
| Quaking aspen<br>( <i>Populus tremuloides</i> )            | Bare Root | 24 - 36" | 6' | 2          |
| Pacific cascara<br>( <i>Rhamnus purshiana</i> )            | Bare Root | 24 - 36" | 6' | 2          |
| <b>Total Trees</b>                                         |           |          |    | <b>8</b>   |
| <b>Wetland Creation Area – (25,660 ft<sup>2</sup>)</b>     |           |          |    |            |
| <b>Shrubs</b>                                              |           |          |    |            |
| Black twinberry<br>( <i>Lonicera involucrata</i> )         | Bare Root | 24 - 36" | 6' | 22         |
| Nootka rose<br>( <i>Rosa nutkana</i> )                     | Bare Root | 24 - 36" | 6' | 95         |

|                                                      |           |          |    |            |
|------------------------------------------------------|-----------|----------|----|------------|
| Scouler's willow<br>( <i>Salix</i> spp.)             | Bare Root | 24 – 36" | 6' | 73         |
| Red-osier dogwood<br>( <i>Cornus alba</i> )          | Bare Root | 24 - 36" | 6' | 25         |
| Douglas Hawthorne<br>( <i>Crataegus douglasii</i> )  | Bare Root | 24 - 36" | 6' | 26         |
| Pacific ninebark<br>( <i>Physocarpus capitatus</i> ) | Bare Root | 24 - 36" | 6' | 16         |
| <b>Total Shrubs</b>                                  |           |          |    | <b>257</b> |
| <b>Trees</b>                                         |           |          |    |            |
| Oregon ash<br>( <i>Fraxinus latifolia</i> )          | Bare Root | 24 - 36" | 6' | 68         |
| Quaking aspen<br>( <i>Populus tremuloides</i> )      | Bare Root | 24 - 36" | 6' | 35         |
| Pacific cascara<br>( <i>Rhamnus purshiana</i> )      | Bare Root | 24 – 36" | 6' | 25         |
| <b>Total Trees</b>                                   |           |          |    | <b>128</b> |

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. Live stakes should be planted between December 1 and March 31. Bare root plants should be planted between January 1<sup>st</sup> and March 31, when plants are dormant.

Live Stakes Planting Guidelines. Live stakes will be inserted into the soil with bud scars oriented in an upright position. Stakes will be inserted so that three-quarters of the stake is in contact with the soil and one-quarter of the stake will be above ground. Mulch (2-3 inches deep) shall be applied around the base of each plant. A plant protector shall be placed around each stake to minimize girdling by rodents. 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.

Bare Root 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 (2-3 inches deep) shall be applied around the base of each plant (min. 1' dia.). A plant protector shall be placed around each plant to minimize girdling by rodents. 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.

Schedule. The mitigation area will be planted within the same calendar year that the project is constructed.

Qualifications. 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.

## **10.0 PERFORMANCE CRITERIA**

The City requires a minimum of five (5) years of monitoring and maintenance, however, since forested plant communities are proposed for the mitigation these activities should continue for at least 10 years. The criteria listed below are intended to meet the requirements of CMC 16.53. 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. Native Woody Species (Buffer Enhancement Areas)
  - a. Performance Standard - Year 1 - Planted, native woody species in the (scrub-shrub, and/or forested) buffer areas will achieve at least 100 percent survival one year after the site is planted. If dead plantings are replaced, the performance standard will be met.
  - b. Performance Standard Years 2-4 – Native woody species (planted or volunteer) will achieve a density of a minimum of 6 shrubs and 3 trees per 1000 ft<sup>2</sup> in the enhanced buffer areas.
  - c. Performance Standard Year 5 - at least 30 percent aerial coverage of native trees and shrubs
  - d. Performance Standard Year 7 - at least 50 percent aerial coverage of native trees and shrubs
  - e. Performance Standard Year 10 - Aerial cover of native woody species will be at least 75 percent in the buffer enhancement areas by the end of the monitoring period (year 10). Natural colonization can make it difficult to separate planted individuals from volunteer trees and shrubs. Therefore, naturally recruited species will be included in vegetation monitoring.
2. Native Woody Species Plant Diversity (Wetland Enhancement/Creation Areas)
  - a. Performance Standard - By Year 3, at least 4 native, facultative or wetter, woody plant species will achieve a minimum three (3) percent aerial cover for each species in the wetland mitigation area.
  - b. Performance Standard - By Year 5, at least 4 native, facultative or wetter, woody plant species will achieve a minimum 30 percent aerial cover for each species in the wetland mitigation area.

- c. Performance Standard - By Year 10, at least 4 native, facultative or wetter, woody plant species will achieve a minimum 80 percent aerial cover for each species in wetland mitigation area.
- 3. Invasive species (all years)
  - a. Performance Standard - During All Years, non-native, invasive plant species, with the exception of reed canarygrass, will not exceed 20 percent aerial cover in the wetland and buffer area on the enhancement mitigation site.
  - b. Performance Standard - Year 5, there will be a 30 percent reduction in reed canarygrass aerial cover compared to baseline conditions.
  - c. Performance Standard - Year 7, there will be a 50 percent reduction in reed canarygrass aerial cover compared to baseline conditions.
  - d. Performance Standard - Year 10, reed canarygrass aerial cover will not exceed 20 percent.

## **11.0 MONITORING AND MAINTENANCE PLANS**

The following actions will be implemented as part of the wetland mitigation 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; 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, 5, 7 and 10. 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 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.
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 the all of the mitigation areas will be installed.

5. Any maintenance that is required within the wetland area will be supervised by a qualified wetland professional familiar with this project.

## **12.0 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 7 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 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. Planting Plan Modifications—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 of Camas.
3. 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 7. Maintenance and Adaptive Management Requirements**

| <b>Maintenance Component</b>   | <b>Defect</b>                          | <b>Conditions When Maintenance is Needed</b>                                                                                                                                              | <b>Results Expected When Maintenance is Performed</b>                                                                                                                            |
|--------------------------------|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Enhancement/<br>Creation Areas | Trash and debris                       | Any trash or debris which exceeds 1 ft. <sup>3</sup> /100ft <sup>2</sup> (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/<br>Creation 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/<br>Creation 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/<br>Creation 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.                                                               |

### 13.0 DEMARCATION

In accordance with the City's ordinance 16.53.040(C)(2) Permanent Marking of Buffer Area, a permanent physical demarcation along the upland boundary of the wetland buffer area shall be installed and thereafter maintained. Such demarcation may consist of logs, a tree or hedgerow, fencing, or other prominent physical marking approved by the responsible official. In addition, small signs shall be posted at an interval of one per lot or every 100 feet, whichever is less, and perpetually maintained at locations along the outer perimeter of the wetland buffer as approved by the responsible official, and worded substantially as follows: "Wetland and Buffer – Please Retain in a Natural State."

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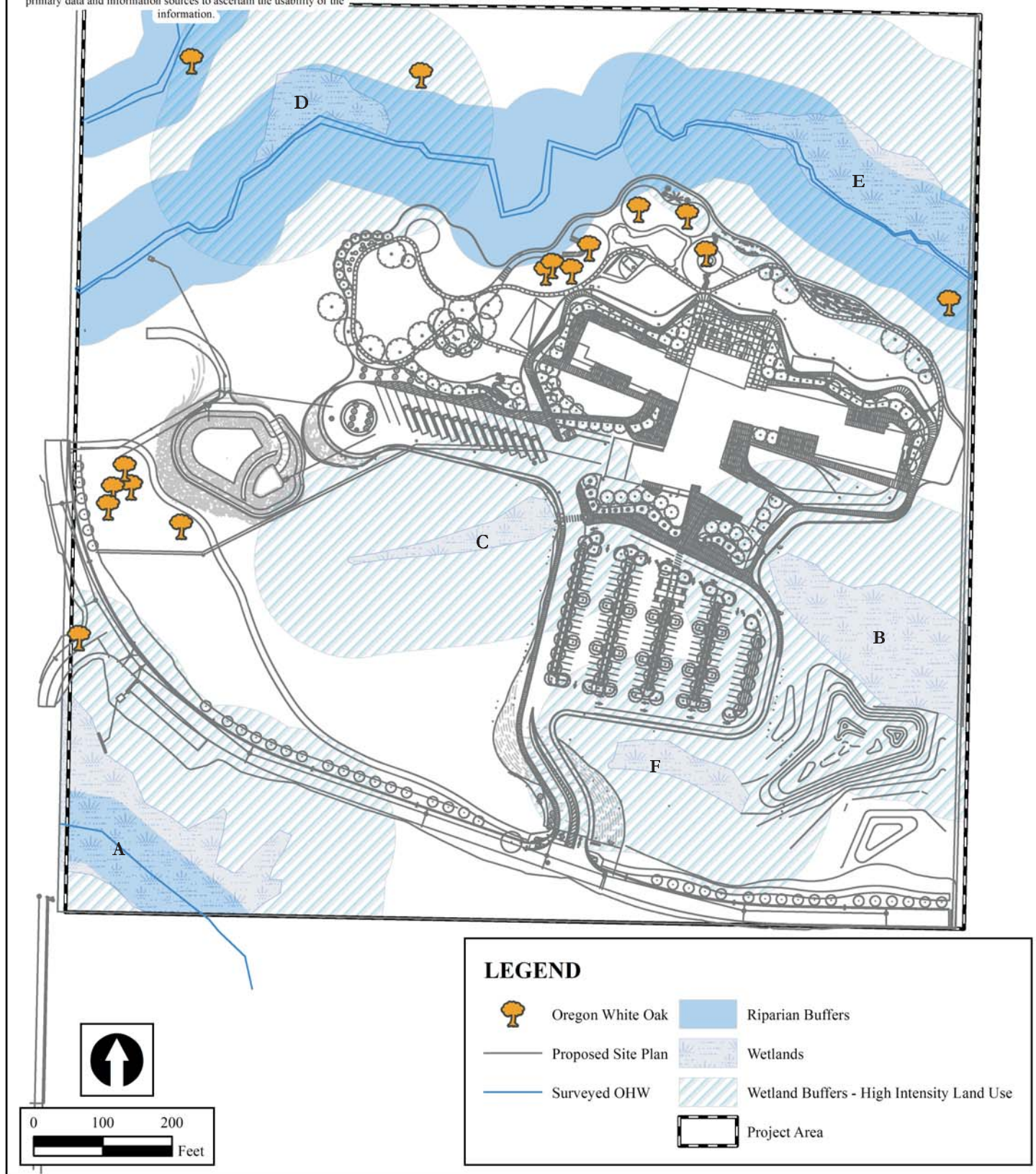
**PURPOSE:** Updated Preliminary Wetland Mitigation Plan



**ENVIRONMENTAL SERVICES • GIS • HABITAT RESTORATION**  
8415 NE 8th Avenue, Vancouver, WA 98665 ph: 360-693-4555 fax: 360-699-6242

**PROPOSED ACTIVITIES IN:**  
Lacamas Creek Watershed  
**LEGAL:** NW ¼ of Section 27, T2N, R3E,  
W.M.,  
**NEAR:** Camas, Washington  
**COUNTY:** Clark County  
**DATE:** February 28, 2017  
**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 22<sup>nd</sup> Avenue  
 Camas, WA 98607

**PURPOSE:** Updated Preliminary Wetland Mitigation Plan

**Proposed Site Plan**  
**Lacamas Heights Elementary School**  
**Camas, Washington**

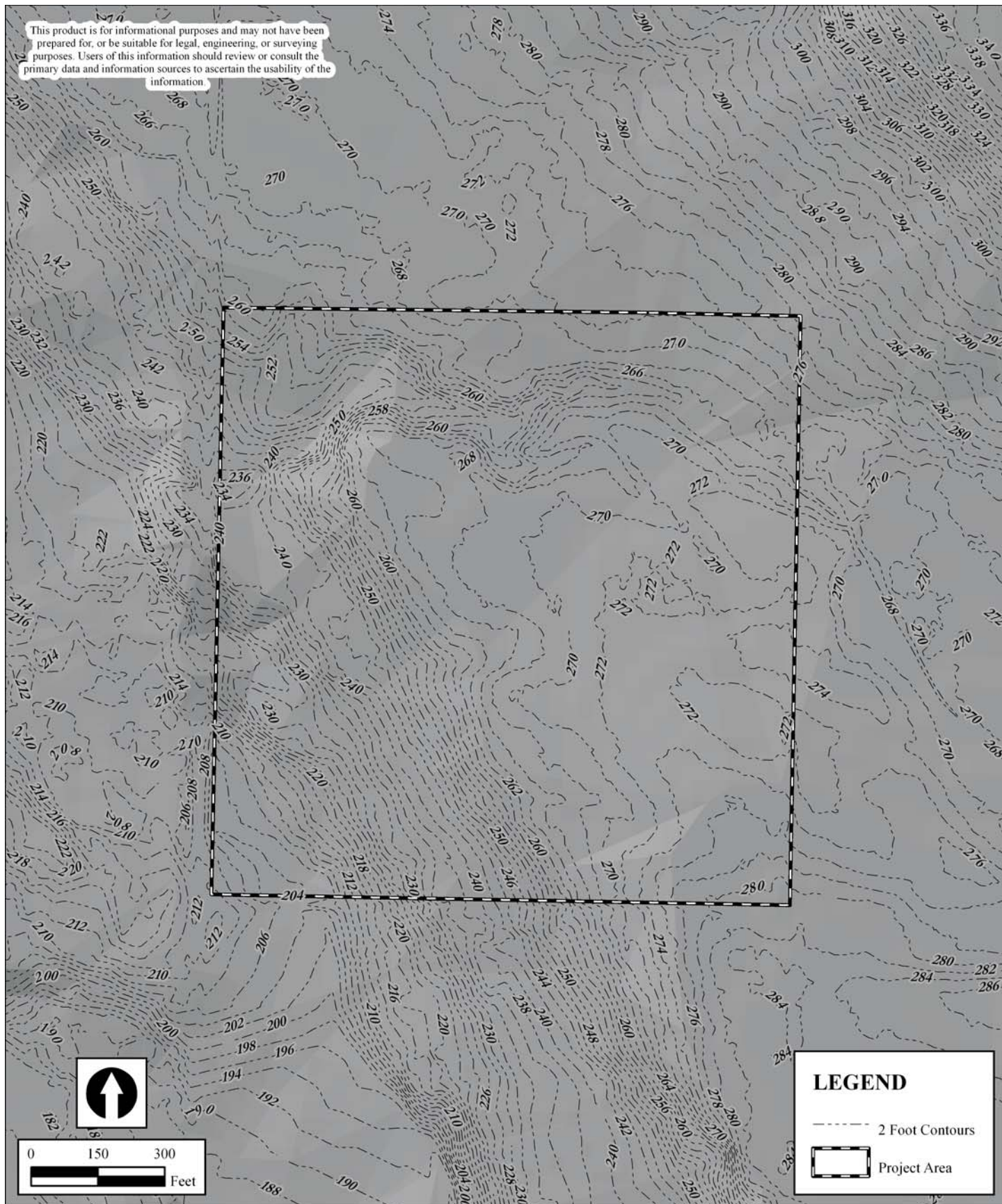


**The Resource Company, Inc.**  
 ENVIRONMENTAL SERVICES • GIS • HABITAT RESTORATION

8416 NE 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:** February 28, 2017  
**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 22<sup>nd</sup> Avenue  
 Camas, WA 98607

**PURPOSE:** Updated Preliminary Wetland Mitigation Plan

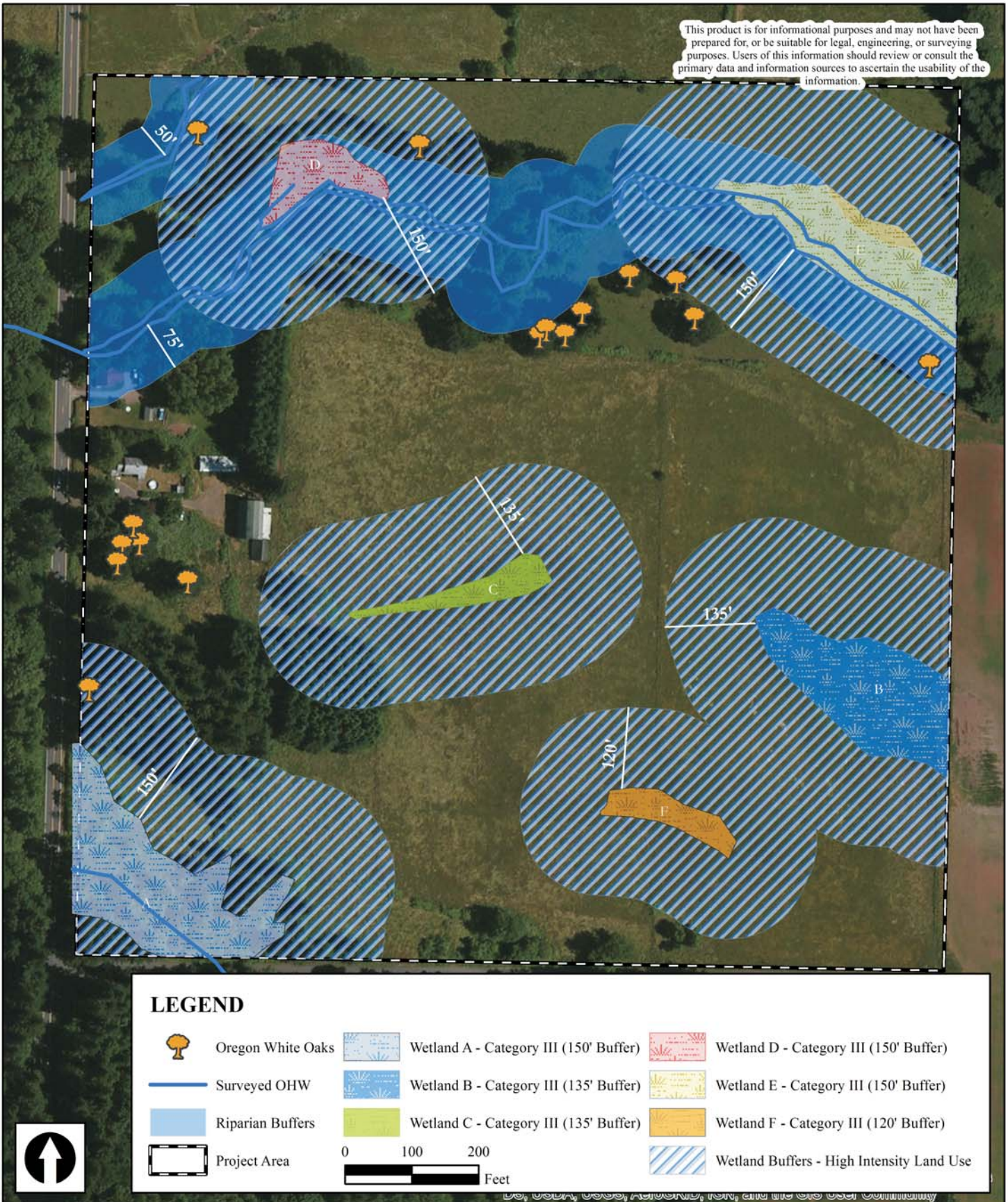
**Clark County LiDAR Topography**  
**Lacamas Heights Elementary School**  
**Camas, Washington**



ENVIRONMENTAL SERVICES • GIS • HABITAT RESTORATION  
 8416 NE 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:** February 28, 2017  
**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.



**Project:** Lacamas Heights Elementary School  
**APPLICANT:** Camas School District  
 841 NE 22<sup>nd</sup> Avenue  
 Camas, WA 98607

**PURPOSE:** Updated Preliminary Wetland Mitigation Plan

**Existing Conditions**  
**Lacamas Heights Elementary School**  
**Camas, Washington**

**The Resource Company, Inc.**  
 ENVIRONMENTAL SERVICES • GIS • HABITAT RESTORATION  
 8416 NE 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:** February 28, 2017  
**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
- Project Area
- Wetlands
- Wetland Buffers
- Buffer Reduction - Shielding

**Project:** Lacamas Heights Elementary School  
**APPLICANT:** Camas School District  
 841 NE 22<sup>nd</sup> Avenue  
 Camas, WA 98607

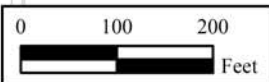
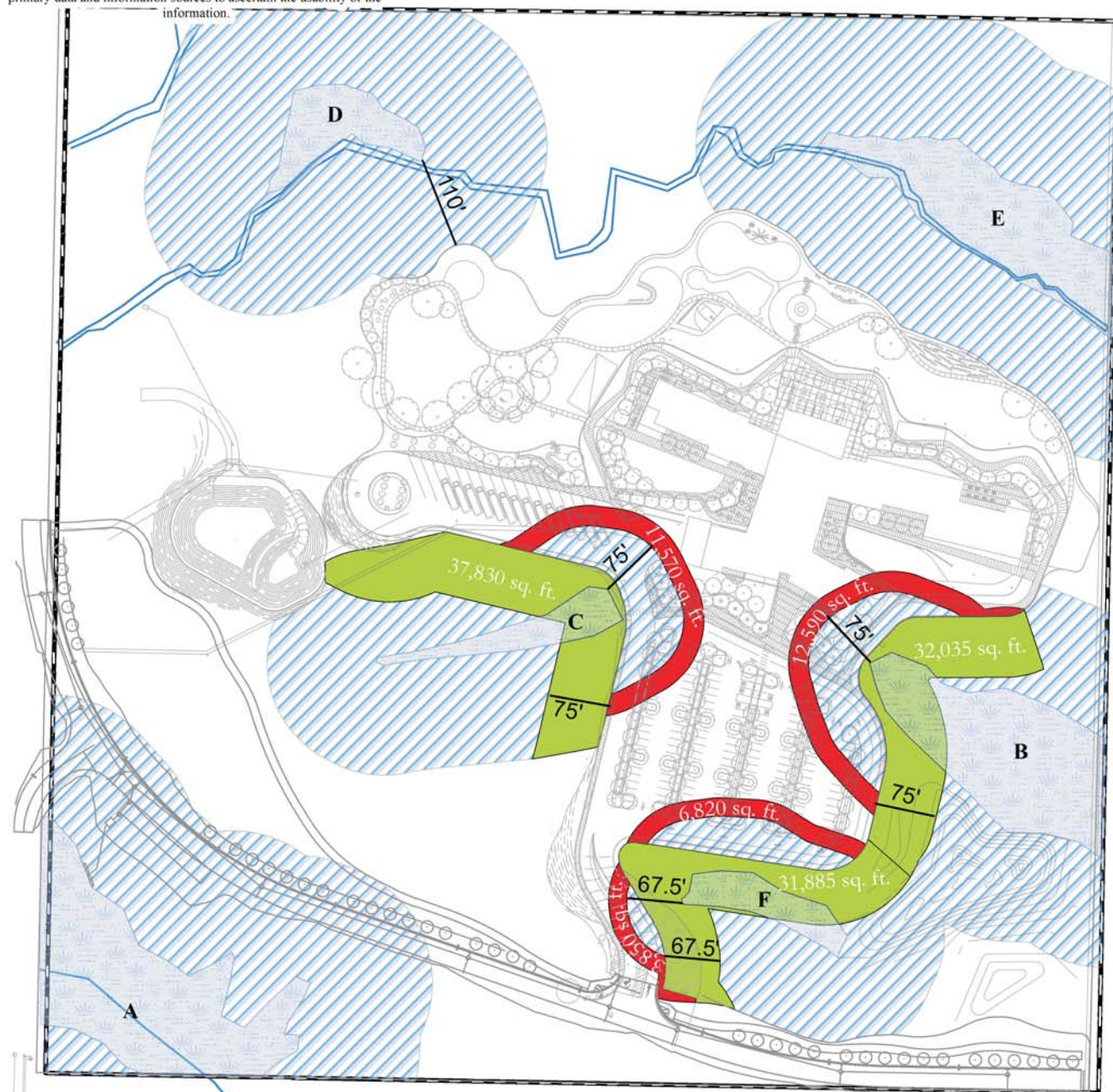
**PURPOSE:** Updated Preliminary Wetland Mitigation Plan

### Proposed Wetland Buffer Reduction - Shielding 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:** February 28, 2017  
**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
- Surveyed OHW
- ▭ Project Area
- ▭ Buffer Reduction - Enhancement (34,828 sq. ft.)
- ▭ Proposed Buffer Enhancement Area (101,750 sq. ft.)
- ▭ Wetlands
- ▭ Wetland Buffers (post shielding)

**Project:** Lacamas Heights Elementary School  
**APPLICANT:** Camas School District  
 841 NE 22<sup>nd</sup> Avenue  
 Camas, WA 98607

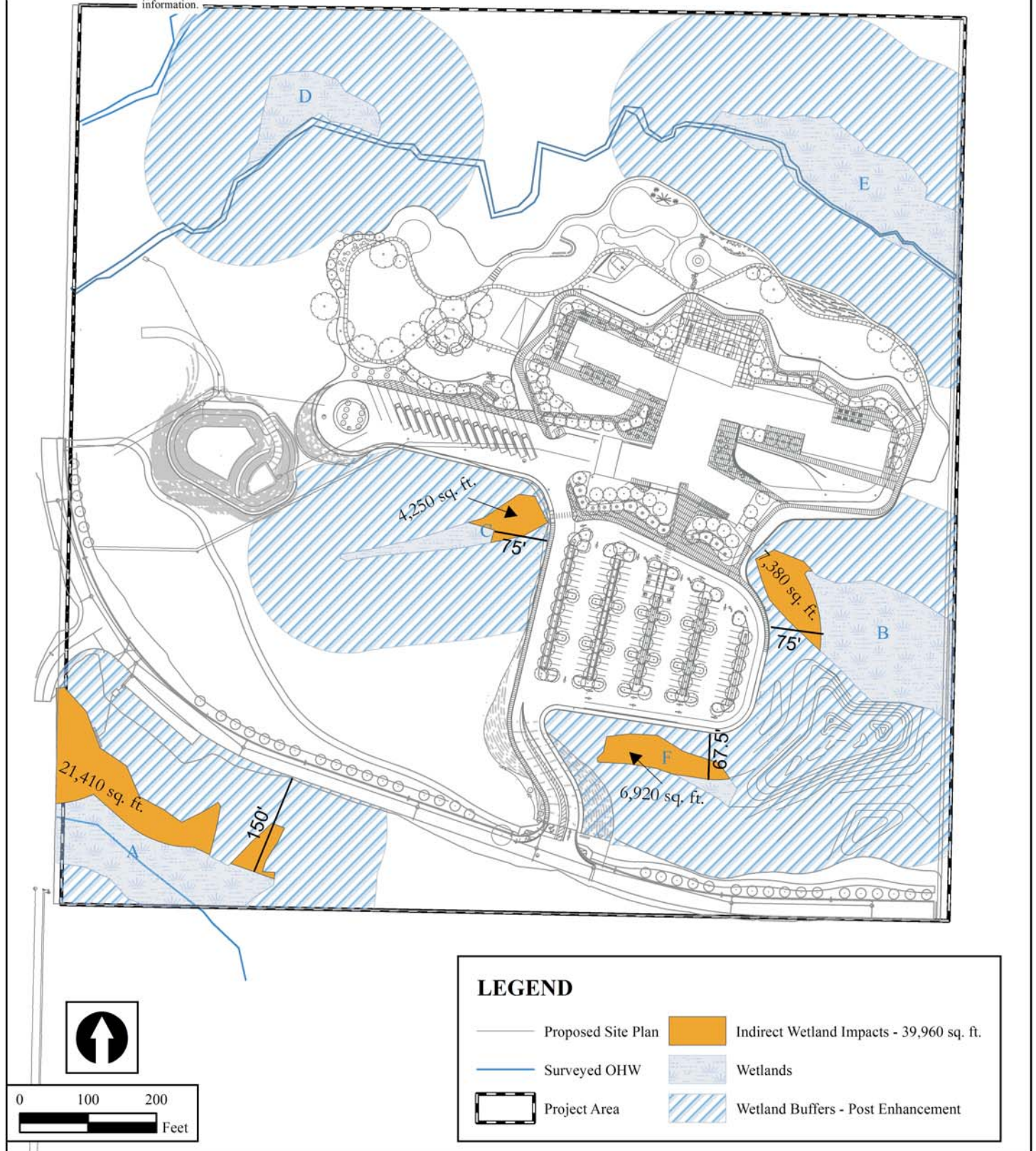
**PURPOSE:** Updated Preliminary Wetland Mitigation Plan

**Proposed Wetland Buffer Reduction - Enhancement**  
**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:** February 28, 2017  
**Figure 6**

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 22<sup>nd</sup> Avenue  
 Camas, WA 98607

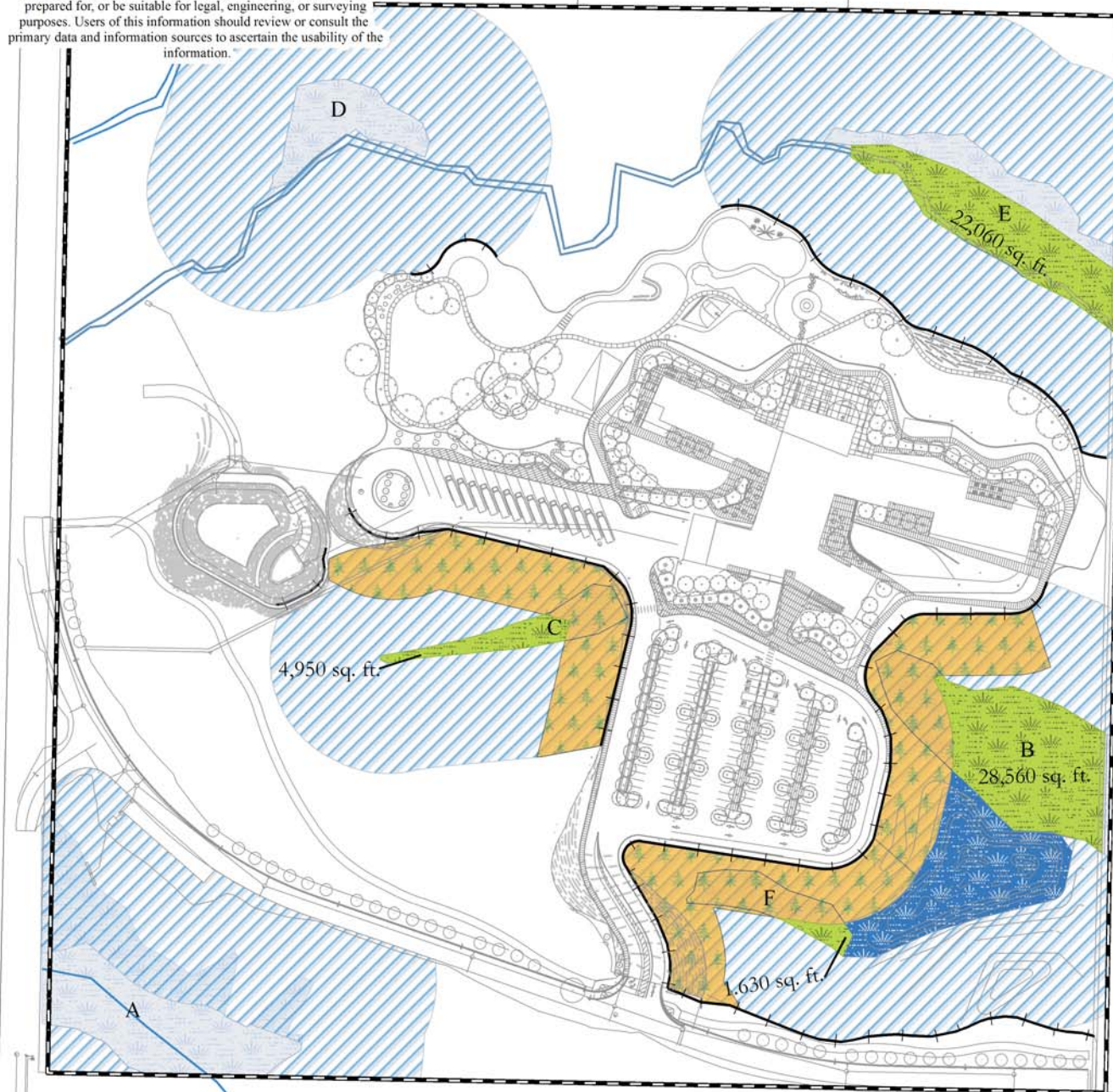
**PURPOSE:** Updated Preliminary Wetland Mitigation Plan

### Proposed Indirect Wetland Impacts 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:** February 28, 2017  
**Figure 7**

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## LEGEND

— Proposed Site Plan

— Minimum Fence Requirement

Wetlands

Wetland Buffers - Post Mitigation



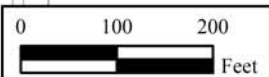
Project Area

## Mitigation Areas

Wetland Creation Area - 25,660 sq. ft.

Wetland Enhancement Area - 57,200 sq. ft.

Wetland Buffer Enhancement Area - 101,750 sq. ft.



**Project:** Lacamas Heights Elementary School

**APPLICANT:** Camas School District  
841 NE 22<sup>nd</sup> Avenue  
Camas, WA 98607

**PURPOSE:** Updated Preliminary Wetland Mitigation Plan

## Proposed Wetland Mitigation Lacamas Heights Elementary School Camas, Washington



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ENVIRONMENTAL SERVICES • GIS • HABITAT RESTORATION  
8416 NE 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:** February 28, 2017

**Figure 8**



**Project:** Lacamas Heights Elementary School  
**APPLICANT:** Camas School District  
 841 NE 22<sup>nd</sup> Avenue  
 Camas, WA 98607

**PURPOSE:** Updated Preliminary Wetland Mitigation Plan

**Project Photographs**  
**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:** February 28, 2017  
**Photo Sheet 1**