

**KAYS SUBDIVISION**

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**WETLAND MITIGATION - REVISED**  
**La Center, Washington**  
**USACE REFERENCE NO. – NWS-2013-739**



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September 5, 2016



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## WETLAND MITIGATION REPORT - REVISED

**Project:** Kays Subdivision Project  
**Applicant:** WARAC, LLC  
**Location:** 555 W 5<sup>th</sup> Street, La Center, Washington  
**Legal Description:** NW ¼ of Sec. 03, T04N, R01E, W. M., Clark County  
**Project Type:** Residential  
**Jurisdiction:** City of La Center  
**Zoning:** LDR-7.5  
**ComPlan:** UL  
**Acreage:** 11.8 acres  
**USACE Ref:** NWS-2013-739  
**Assessment by:** Kevin Grosz, P.W.S.  
**Delineation Report Date:** December 12, 2012  
**Preliminary Mitigation Report Date:** March 4, 2015  
**Wetland Mitigation Plan Revised Report Date:** September 5, 2016

### **1.0 INTRODUCTION**

This report details a revised wetland mitigation plan for the Kays Subdivision and stormwater outfall prepared by The Resource Company, Inc. (TRC). The project is proposing to construct a residential subdivision within the parcel identified as assessor's serial number 2094888-000 located at 555 W. 5<sup>th</sup> Street, La Center, Washington (Fig. 1). In addition, a stormwater pipeline will cross the property to the south and southwest and outfall to the East Fork of the Lewis River (EFLR). The stormwater pipe will be located in the City's Right-of Way (ROW) for W. 5<sup>th</sup> Avenue as it extends from near its current terminus to the EFLR. The project will impact a small Category IV wetland for a road crossing within the subdivision, temporarily impact a small wetland for the installation of the stormwater outfall pipe adjacent to the EFLR and the outfall pipe below the Ordinary High Water Mark (OHWM).

A revised wetland delineation was completed in 2012 which was updated in January 2016 based on a site visit conducted with Washington Department of Ecology. The initial wetland delineation was conducted in 2005 by TRC and a wetland mitigation plan was prepared by LDC Design Group in 2005. This revised wetland mitigation plan for the subdivision addresses minor changes in the wetland configuration and modifies the original plan from enhancement of Wetland B to purchase credits from the East Fork Lewis Wetland Mitigation Bank (EFLWMB). In addition, this plan addresses the temporary impact of the wetland near the EFLR and the stormwater outfall pipe impacts below the OHWM of the EFLR.

The development and outfall areas contain three wetlands and critical habitat areas associated with the EFLR. This report addresses direct, indirect, and temporary impacts to the wetland and buffer areas as regulated by the City of La Center Critical Areas Ordinance – Wetlands (18.300.090(6)) as well as the Washington Department of Ecology (Ecology) and U.S. Army Corps of Engineers (USACE) under Sections 401 and 404 of the Clean Water Act, respectively.

## **2.0 EXISTING CONDITIONS**

Currently the properties proposed for the subdivision and outfall pipeline are vacant. Topography slopes moderately from northeast to southwest (Fig. 2) in the subdivision development area and relatively steeply where the stormwater pipe proceeds southwest to the EFLR. Three wetlands and two habitat areas were identified within the project area. The wetlands within the study areas are described below.

### Wetland A (6,346 sq. ft.) – Wetland B (49,876 sq. ft. – within project area)

Wetlands A and B (Fig. 3) both meet the criteria of a slope hydrogeomorphic (HGM) wetland class. These Category IV wetlands are similar in vegetation, soils and hydrology and therefore are described together. The wetlands are palustrine emergent, temporarily/seasonally inundated-saturated (PEMF/C) wetlands. Vegetation in the wetlands is dominated by reed canarygrass (*Phalaris arundinacea* – FACW), tall fescue (*Schedonorus arundinacea* – FAC), bird's foot trefoil (*Lotus corniculatus* – FAC), soft rush (*Juncus effusus* – FACW), bentgrass (*Agrostis stolonifera* – FAC), and creeping buttercup (*Ranunculus repens* – FAC). Hydrologic indicators within the wetlands were water at the surface. Oxidized rhizospheres were found along the root channels. Hydric soil characteristics generally include a silt loam that is very dark brown (10YR 3/2) in the top four (4) inches, below this to a depth greater than 16 inches is a very dark brown clayey silt loam with dark brown (7.5YR 3/4) redox concentrations. Wetlands A and B both rated as Category IV wetlands according to the Western Washington Wetland Rating Form (WRF). Wetland A was previously determined to be isolated by the USACE and not under their jurisdiction. However, under the current guidelines (likely overland or shallow subsurface connection) for isolated wetlands it was determined that this wetland is not isolated and is regulated by the USACE.

### Wetland C (807 sq. ft. – within project area)

Wetland C (Fig. 3) meets the criteria of riverine/depressional hydrogeomorphic (HGM) wetland class that rates as a Category IV wetland. This wetland occurs adjacent to the EFLR and its hydrology is somewhat influenced by river flow. A summary of the wetland information is given below.

Wetland C is a palustrine emergent, temporarily inundated (PEMA) wetland. Vegetation in the wetlands is dominated by meadow foxtail (*Alopecurus pratensis* – FAC), creeping buttercup (*Ranunculus repens* – FAC) and slough sedge (*Carex obnupta* – OBL). Hydrologic indicators within the wetlands were water at 10 inches below the surface and oxidized rhizospheres along living root channels. Hydric soil characteristics generally include a silty sand that is dark grayish brown (10YR 4/2) with dark reddish brown (5YR

3/4) concentrations to a depth of at least 16 inches. Wetland C rated as a Category IV wetland according to the Western Washington Wetland Rating Form.

Wetland Functional Assessment

The on-site wetlands have been assessed using the Washington State Wetland Rating System for Western Washington (Hruby 2004). The system was designed to differentiate between wetlands based on their sensitivity to disturbance, their significance, their rarity, our ability to replace them, and the functions they provide. Through a series of questions, the wetland rating system will yield a number for water quality functions, hydrologic functions, and habitat function, which yield a total score for functions. Based on the total score, the wetland is categorized as a Category I, II, III, or IV wetland. Table 1 below summarizes the wetland type, total score for functions, and category of the three wetlands identified on-site.

**Table 1. Wetland Function Rating**

Wetland	Wetland Type	Water Quality Functions	Hydrologic Functions	Habitat Functions	Total Score	Wetland Category
A	Slope	0	0	8	8	IV
B	Slope	2	8	4	14	IV
C	Depressional	8	6	12	26	IV

Non-Wetlands

The non-wetland portion surrounding Wetlands A and B is predominantly an open grassland pasture that was being grazed by cattle at the time of the delineation. Vegetation is dominated by a mixture of bentgrasses, tall fescue, clover (*Trifolium spp.*), and bird’s foot trefoil. Vegetation surrounding Wetland C consists of Oregon white oak, big-leaf maple (*Acer macrophyllum* – FACU), Douglas-fir, hazelnut (*Corylus cornuta* – FACU), snowberry (*Symphoricarpos alba*– FAC), reed canarygrass, and stinging nettle. Soils in the non-wetland portion of the site are generally a dark grayish brown (10YR 3/2) silt sand with no hydric indicators. No wetland hydrology indicators were observed in the non-wetland portions of the study area.

Photographs of the study area are provided in Photo-Sheet 1.

**3.0 AVOIDANCE AND MINIMIZATION**

The project is proposing to fill Wetland A for a road crossing that will allow for traffic circulation within the subdivision. In addition, a stormwater pipeline will cross the property to the south and outfall near a wetland adjacent to the EFLR. A wetland on the bench at the toe of the slope will be temporarily impacted for the installation of the outfall pipe. The construction zone through the 250-foot RHCA will be located along the slope to avoid the removal of large trees. However, some small trees and shrubs that cannot be avoided will be removed. No Oregon white oak trees will be removed for the installation of the outfall pipe.

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

1. All wetland, wetland buffer, and riparian buffer boundaries will be temporarily flagged in the field prior to construction.
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 WETLAND/STREAM IMPACTS (TABLE 2)**

The Applicant is proposing to impact Wetland A for the subdivision road crossing as shown in Figures 4 and 5, and detailed in Figures 6 and 7. The entire wetland (6,346 ft<sup>2</sup>) will be directly or indirectly impacted for the construction of the roadway. A portion of Wetland C (440 ft<sup>2</sup>) will be temporarily impacted for the installation of the stormwater outfall pipe as shown in Figure 8. The extension of the outfall structure below the OHWM of the EFLR will impact 96 ft<sup>2</sup> (Figs. 8 and9).

Wetland A impacts will be compensated by purchasing credits in the EFLWMB as recommended by USACE staff. Wetland C (temporary impacts) will be restored as outlined below and shown in Figure 10. In addition, installation of the stormwater pipeline will temporarily impact 8,455 ft<sup>2</sup> of the riparian conservation zone of the EFLR. The temporary habitat impacts and compensation are addressed in the habitat restoration plan that was submitted to the City of La Center. This temporary impact will be restored and the riparian area within the City’s ROW adjacent to EFLR will be enhanced

**Table 2. Proposed Wetland/Stream Impacts (Figs. 5 – 9).**

Wetland Identifier	Wetland Area (sq.ft.) On-site	Permanently Filled Wetland Area (sq.ft.)	Temporarily Impacted Wetland Area (sq.ft.)	Quantity of Fill Material/Type (cu. yds.)	Indirect Impact Area (sq.ft.)	Cowardin Classification	Ecology Rating	Local Jurisdiction Rating	HGM Classification
A	6,340	6,346	0	1,175 cu.yds Compacted Soils/Asphalt	0	PEMF	IV	IV	Slope
B	49,876	0	0	0	0	PEMC	IV	IV	Slope
C	807	0	440	60 cu. yds. Soil Restoration 48” Corrugated Pipe	0	PEMA	IV	IV	Depressional/ Riverine
EFLR Outfall Structure Below OHWM	--	96	0	48” Corrugated Pipe	0				
<b>TOTALS</b>	<b>57,029</b>	<b>6,346</b>	<b>440</b>		<b>0</b>				

## **5.0 MITIGATION ACTIVITIES**

**Wetland A.** The previously approved wetland mitigation plan (LDC 2005) called for excavating Wetland B to create an extended water regime and emergent, scrub/shrub and forested plant communities. Wetland B is situated on a ledge that sits above a historic landslide area. Creating an extended water regime within this area could aggravate the slide potential of that slope. Due to this and USACE mitigation rule, which recommends mitigation banks as preferred method of wetland mitigation, the impacts for Wetland A will be compensated through the purchase credits from the EFLWMB. The project area is located within the East Fork Lewis River Watershed (Fig. 11) and the service area of the EFLWMB (Fig. 12). The bank service area (Fig. 12) encompasses Water Resource Inventory Area (WRIA) 27 whose boundaries are determined by Ecology. WRIA 27 includes EFLR drainage basin which contains the Kays site (Fig. 11). According to the EFLMB banking instrument a functional assessment of the bank was conducted in accordance with the Washington State Method for Assessing Wetland Functions (WAFAM): Volumes I and II. This assessment was conducted to determine existing wetland functional conditions the potential change in function post-bank construction. According to the results of this assessment, the bank will significantly increase water quality, water quantity and habitat functions of existing conditions within the bank service area. The credit-debit ratio for the bank is outlined in Table 3 (Bank Instrument – Appendix E, Table E-1). Wetland A is a Category IV wetland as rated by Ecology’s rating system for western Washington. As per the approved EFLWMBG bank instrument, Category IV wetlands are compensated at a 0.85:1 ratio (Table 3). Therefore, the applicant is proposing to purchase 0.13 bank credits (Table 4) to compensate for the 0.15 acres of wetland permanent impact to Wetland A.

**Table 3. Credits Recommended for Wetland Impacts for EFLMB.**

Category of Impacted Wetland	Credit Recommended per Impact Acre
I	Case-by-Case
II	1.2:1
III	1:1
IV	0.85:1
Critical Area Buffer	Case-by-Case

**Table 4. Mitigation Bank Credits Proposed for Wetland A Permanent Wetland Impacts**

Wetland	Total Wetland Area (on-site) (sq.ft./ac)	Permanently Filled Wetland Area (sq.ft./ac)	Indirect Wetland Impact Area (sq.ft./ac)		Credit Needed per Impact	Credit Proposed for Use
				Ecology Rating		
A	6,346/0.15	6,346/0.15	0	IV	0.85	0.13
<b>TOTAL</b>	6,346/0.15	6,346/0.15	<b>0</b>			<b>0.13</b>

Wetland C. Wetland C will be temporarily impacted (440 ft<sup>2</sup>) during the excavation of the stormwater outfall pipe as shown in Figure 8. The trench area will be restored to preconstruction contours. The construction area and the remaining portion of Wetland C within the City's ROW (807 ft<sup>2</sup>) will be planted with native shrubs (Fig. 10, Table 5).

Outfall Pipe Below OHWM/Riparian Habitat Conservation Area. The installation of the outfall pipe within the 250-foot riparian habitat conservation area will temporarily impact 8,455 ft<sup>2</sup> of that critical area and 96 ft<sup>2</sup> below the OHWM of the EFLR. Once the installation has been completed this area will be restored to preconstruction contours and seeded with a native seed mixture listed below. In addition, the non-forested section of the riparian area (4,630 ft<sup>2</sup>) adjacent to the OHWM of the EFLR (Fig. 10) will be planted with native willow as outlined in Table 5.

Any ground disturbance within the wetland/riparian buffer caused by the construction of the subdivision, associated roads and installation of the outfall pipe will be restored by seeding the following native grass seed mixture or a similar native seed mixture:

**Blue wildrye (*Elymus glaucus*) 40%**  
**California brome (*Bromus carinatus*) 40%**  
**Native red fescue (*Festuca rubra*) 15%**  
**Tufted hairgrass (*Deschampsia caespitosa*) 5%**  
**The seeding rate for this mixture is: 1 lb./1000 sq. ft.**

## **6.0 MITIGATION GOALS**

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 City of La Center, Ecology, and the USACE. The Category IV direct wetland impacts (Wetland A) will be compensated through purchase of 0.13 credits from the EFLWMB at a 0.85:1 ratio as the bank instrument. The total direct Category IV wetland impact for providing for lots and street (Wetland A) is 0.15 acres (6,346 ft<sup>2</sup>). The total temporary direct Category IV wetland impact (Wetland C) is 440 ft<sup>2</sup> for the excavation of the outfall pipeline. Wetland C (0.02 ac) will be restored and enhanced by planting native trees and shrubs (Fig. 10, Table 5). In addition, the 96 ft<sup>2</sup> impact for the outfall pipe will be compensated by planting 4,630 ft<sup>2</sup> of the riparian buffer adjacent to the EFLR (Fig. 10, Table 5).

## **7.0 OBJECTIVES**

**Objective #1** The proposed mitigation will compensate for direct wetland impacts (Wetland A) by obtaining credits from the ERLWMB which is designed to improve overall wetland functions within the bank service area and temporary wetland impacts through the restoration and enhancement of Wetland C and the riparian area adjacent to the EFLR.

**Objective #2** Compensatory mitigation will improve plant diversity by planting a total of 0.12 acres of wetlands and wetland/riparian buffer with native shrubs on-site. The predominantly open grassland wetlands will be replaced by a native scrub/shrub community.



**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 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 summer of 2017. Wetland enhancement 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 on-site mitigation measures. A total of 22 shrubs will be planted within 807 ft<sup>2</sup> of Wetland C enhancement area and another 127 shrubs will be planted in the riparian habitat conservation area adjacent to the EFLR (Table 5). The planting of the wetland and buffer will provide for greater habitat structure and diversity and improved water quality. Plant species and numbers are presented in Table 5 below.

**Table 5. Wetland/Riparian Enhancement/Restoration Area Planting (Fig. 10).**

Species	Plant Form	Minimum Size	Minimum Spacing	Required Number
<b>Wetland C Enhancement Area (807 ft<sup>2</sup>)</b>				
<b>Shrubs</b>				
Native willow ( <i>Salix Sp.</i> )	Cuttings	24 – 36”	6’	22
<b>Total Shrubs</b>				<b>22</b>
<b>Riparian Habitat Conservation Area (4,630 ft<sup>2</sup>)</b>				
Native willow ( <i>Salix Sp.</i> )	Cuttings	24 – 36”	6’	127
<b>Total Shrubs</b>				<b>127</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. Bare-root shrubs and trees should be planted between December 1 and March 31, when plants are dormant. If planting is conducted outside this time period, containerized plant stock will be used and extra care and watering may be needed to ensure that plants become adequately established.

Schedule. The mitigation area will be planted within the same calendar year that the stormwater facility is installed.

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, the USACE and Ecology require at least 10 years of these activities. The criteria listed below are intended to meet the requirements of both entities. 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
  - a. Performance Standard - Year 1 - Planted, native woody species in the (scrub-shrub) wetland at the mitigation site 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 per 1000 ft<sup>2</sup> in the wetland enhanced mitigation areas.
  - c. Performance Standard Year 5 - at least 30 percent aerial coverage of native and shrubs
  - d. Performance Standard Year 7 - at least 50 percent aerial coverage of native and shrubs
  - e. Performance Standard Year 10 - Aerial cover of native woody species will be at least 75 percent in the wetland 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.
  
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 and 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 the 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> years. In addition, to meet USACE and Ecology's requirements, monitoring will be conducted in years 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 LaCenter, USACE, and Ecology. 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 the enhancement 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 enhanced wetland area 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 6 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 La Center.
  
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 6. 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 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 Areas	Erosion	Eroded damage >2 inches deep where cause of damage is still present or where there is potential for continued erosion.	Eroded areas should be stabilized with appropriate erosion control BMPs (e.g., seeding, mulching, rip rap).
Enhancement Areas	Plant mortality	Plant mortality jeopardizes attaining the required survival rate.	Plants should be replaced according to the planting plan. Modifications to the planting plan should be made if monitoring identifies problems with the original planting scheme.
Enhancement Areas	Invasion of undesirable plant species.	Undesirable plant species are hindering the growth and establishment of the favored plant stands.	Undesirable species removed by hand, or in accordance with recommendations of the Clark County Weed Control Board.

### **13.0 DEMARCATION**

In accordance with the City's ordinance 18.300.090(6)(f)(vi) 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 hearings examiner. 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 worded substantially as follows: "Wetland and Buffer – Please Retain in a Natural State."

## **FIGURES**

**FIGURE 1 OF 13 – PROJECT LOCATION**

**FIGURE 2 OF 13 – CLARK COUNTY LIDAR TOPOGRAPHIC MAP**

**FIGURE 3 OF 13 – EXISTING CONDITIONS**

**FIGURE 4 OF 13 – PROPOSED SITE PLAN**

**FIGURE 5 OF 13 – PROPOSED IMPACTS WETLAND A**

**FIGURE 6 OF 13 – WETLAND A ROADWAY FILL DETAILS**

**FIGURE 7 OF 13 – WETLAND A ROADWAY FILL CROSS SECTION**

**FIGURE 8 OF 13 – WETLAND C TEMPORARY IMPACTS**

**FIGURE 9 OF 13 – OUTFALL PIPE IMPACTS**

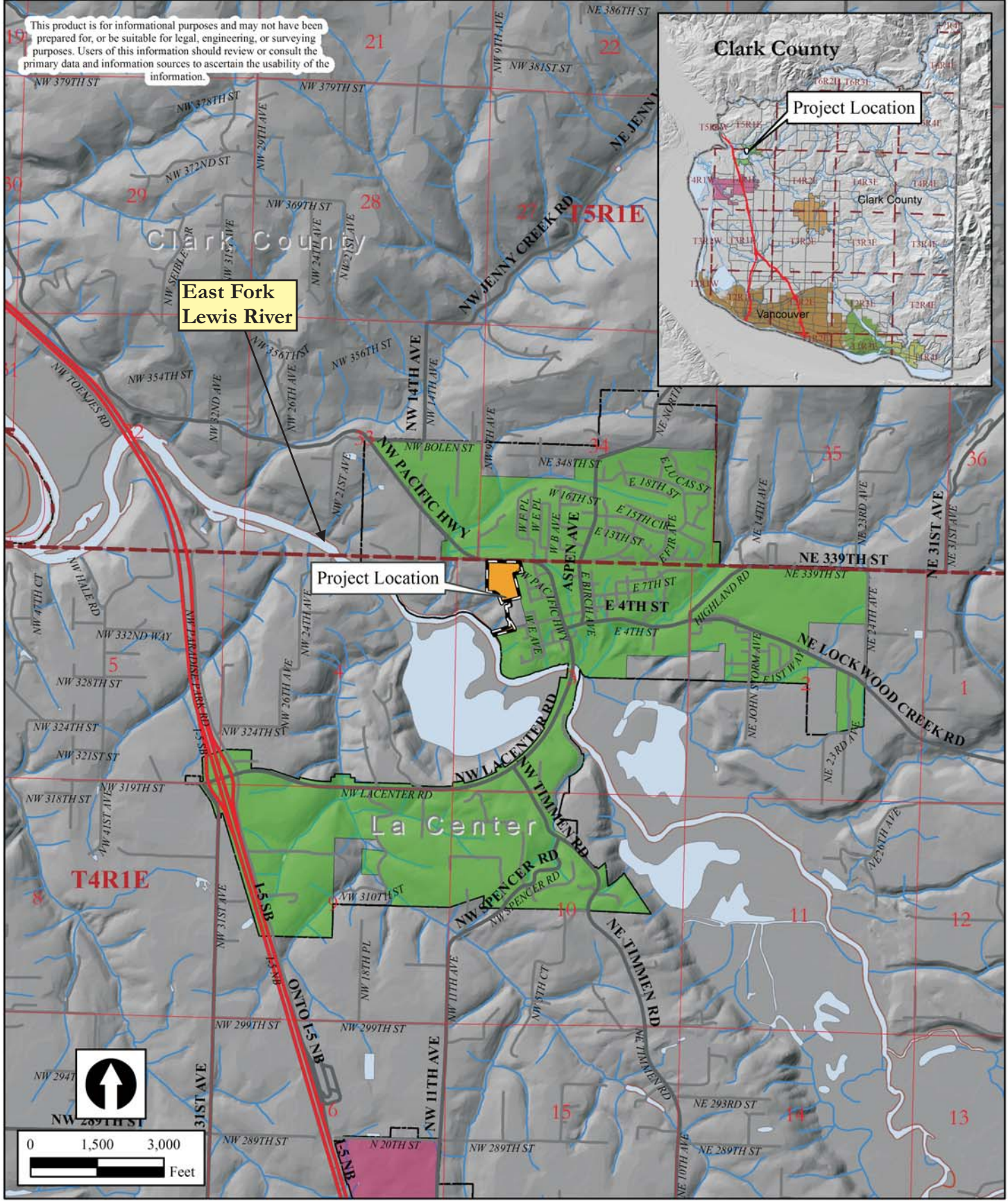
**FIGURE 10 OF 13 – WETLAND C AND RIPARIAN ENHANCEMENT**

**FIGURE 11 OF 13 – EAST FORK LEWIS RIVER WATERSHED MAP**

**FIGURE 12 OF 13 – EFLWMB SERVICE AREA**

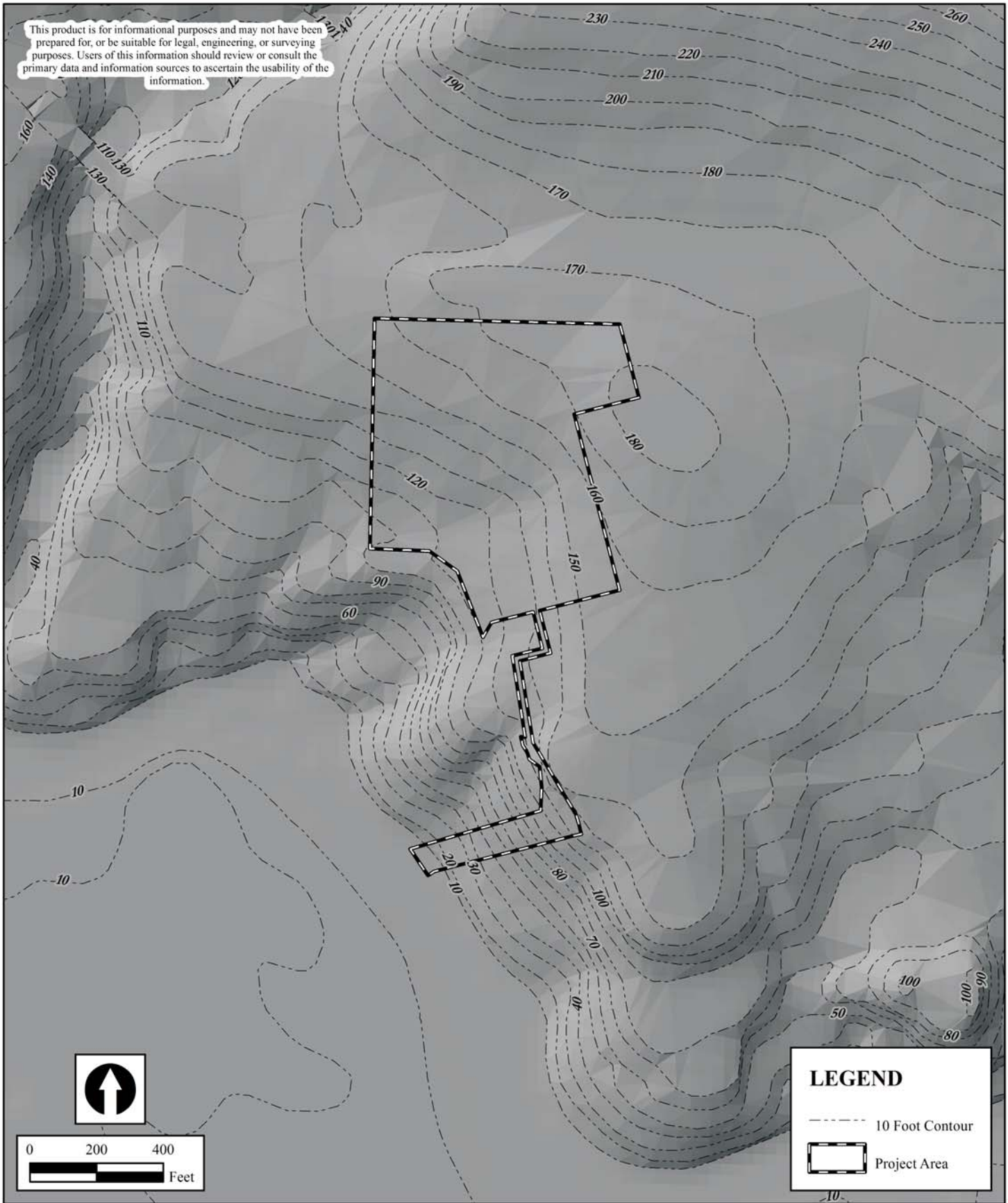
**FIGURE 13 OF 13 – PROJECT PHOTOGRAPHS**







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Corps Reference No.: NWS-2013-739  
WARAC, LLC

APPLICANT:  
WARAC, LLC  
7211 A NE 43rd Avenue  
Vancouver, WA 98661

PURPOSE: Revised Wetland Mitigation

Clark County LiDAR Topography  
Kays Subdivision Project  
La Center, Washington



The Resource Company, Inc.

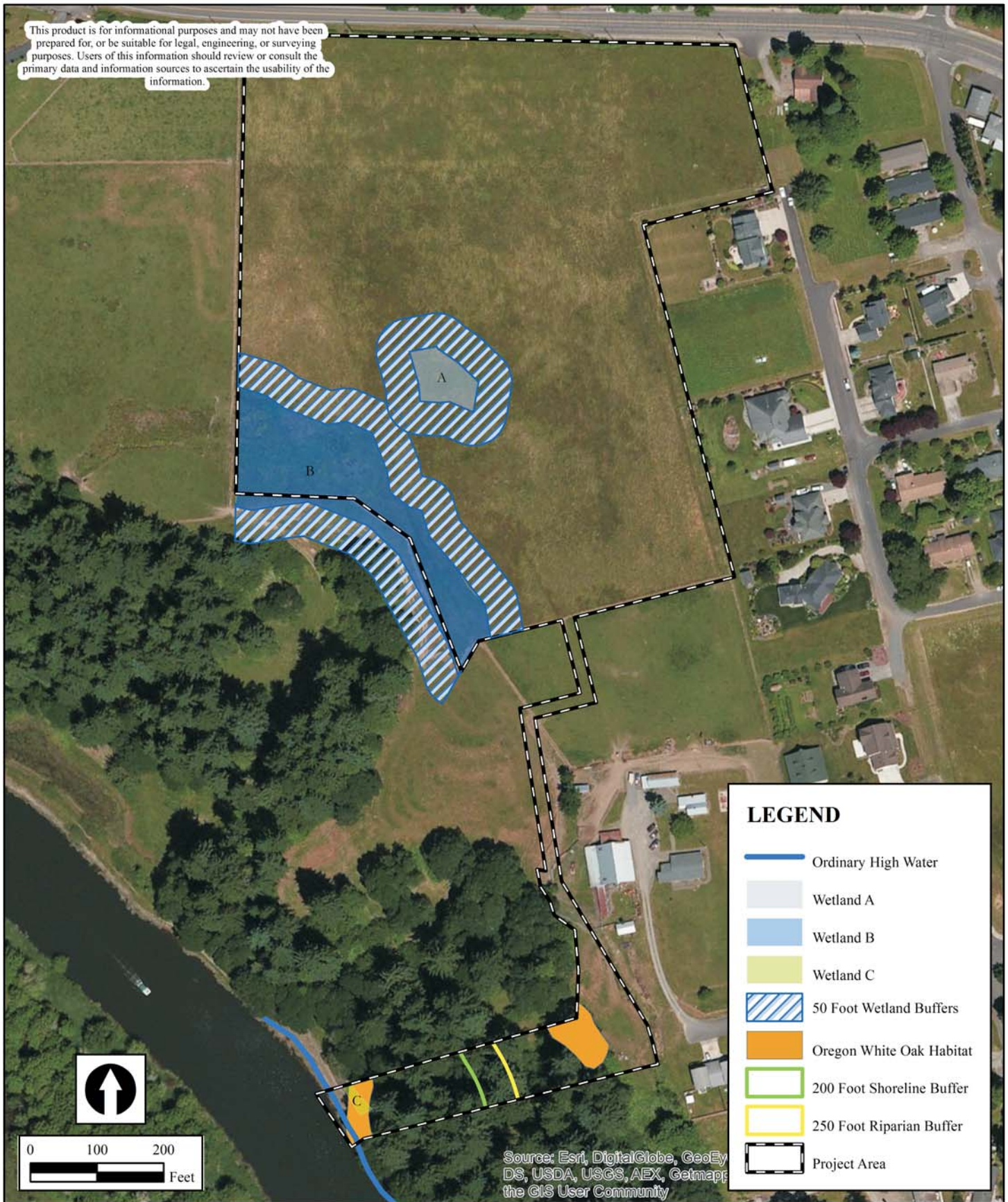
ENVIRONMENTAL SERVICES • GIS • HABITAT RESTORATION  
8415 N.E. 8th Avenue, Vancouver, WA 98666 ph: 360-693-4655 fax: 360-699-6242

PROPOSED ACTIVITIES IN:  
E. Fork of the Lewis River Watershed  
LEGAL: NW ¼ of Section 3, T4N, R1E,  
W. M.,  
NEAR: La Center, Washington  
COUNTY: Clark County  
DATE: September 5, 2016

Figure 2 of 13



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**LEGEND**

-  Ordinary High Water
-  Wetland A
-  Wetland B
-  Wetland C
-  50 Foot Wetland Buffers
-  Oregon White Oak Habitat
-  200 Foot Shoreline Buffer
-  250 Foot Riparian Buffer
-  Project Area

Source: Esri, DigitalGlobe, GeoEye, DS, USDA, USGS, AEX, Getmap, the GIS User Community

Corps Reference No.: NWS-2013-739  
WARAC, LLC

APPLICANT:  
WARAC, LLC  
7211 A NE 43rd Avenue  
Vancouver, WA 98661

PURPOSE: Revised Wetland Mitigation

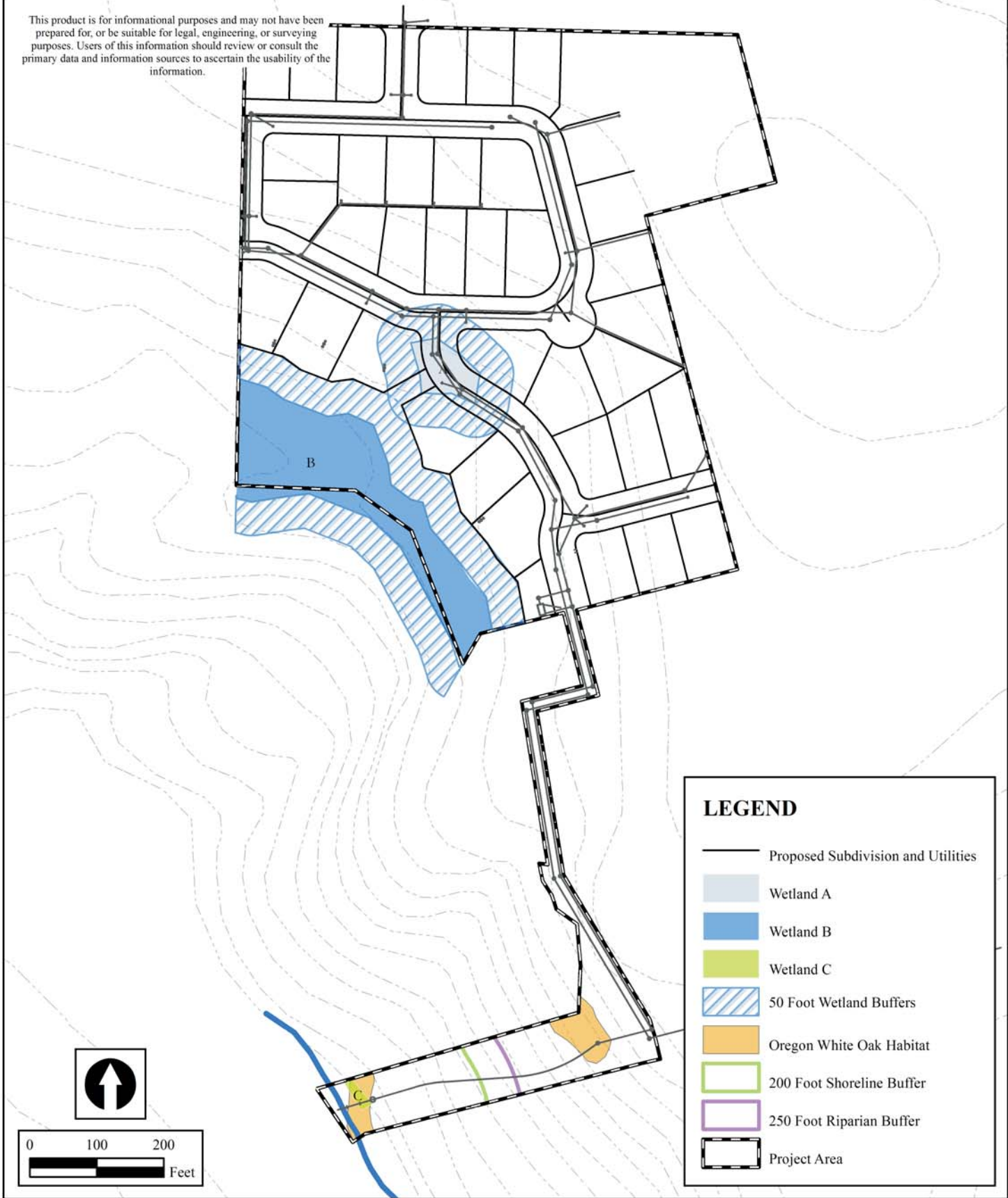
Existing Conditions  
Kays Subdivision Project  
La Center, Washington












PROPOSED ACTIVITIES IN:  
E. Fork of the Lewis River Watershed  
LEGAL: NW ¼ of Section 3, T4N, R1E, W. M.,  
NEAR: La Center, Washington  
COUNTY: Clark County  
DATE: September 5, 2016  
**Figure 3 of 13**



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**LEGEND**

-  Proposed Subdivision and Utilities
-  Wetland A
-  Wetland B
-  Wetland C
-  50 Foot Wetland Buffers
-  Oregon White Oak Habitat
-  200 Foot Shoreline Buffer
-  250 Foot Riparian Buffer
-  Project Area

Corps Reference No.: NWS-2013-739  
WARAC, LLC

APPLICANT:  
WARAC, LLC  
7211 A NE 43rd Avenue  
Vancouver, WA 98661

PURPOSE: Revised Wetland Mitigation

**Proposed Site Plan  
Kays Subdivision Project  
La Center, Washington**

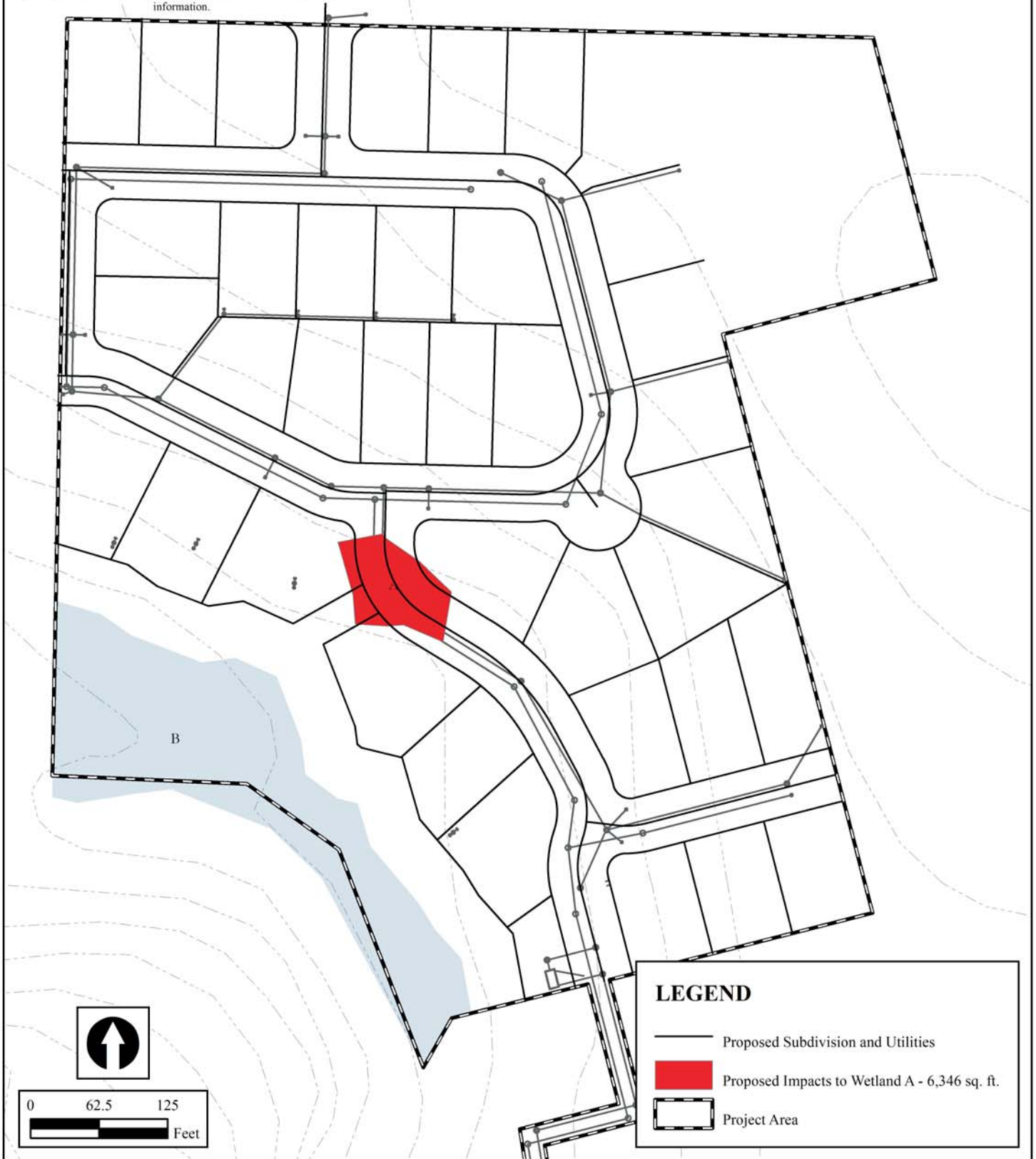


**The Resource  
Company, Inc.**

ENVIRONMENTAL SERVICES • GIS • HABITAT RESTORATION  
8415 N.E. 8th Avenue, Vancouver, WA 98666 ph: 360-693-4655 fax: 360-699-6242

**PROPOSED ACTIVITIES IN:**  
E. Fork of the Lewis River Watershed  
**LEGAL:** NW ¼ of Section 3, T4N, R1E,  
W. M.,  
**NEAR:** La Center, Washington  
**COUNTY:** Clark County  
**DATE:** September 5, 2016  
**Figure 4 of 13**

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Corps Reference No.: NWS-2013-739  
WARAC, LLC

APPLICANT:  
WARAC, LLC  
7211 A NE 43rd Avenue  
Vancouver, WA 98661

PURPOSE: Revised Wetland Mitigation

**Proposed Impacts - Wetland A**  
**Kays Subdivision Project**  
**La Center, Washington**

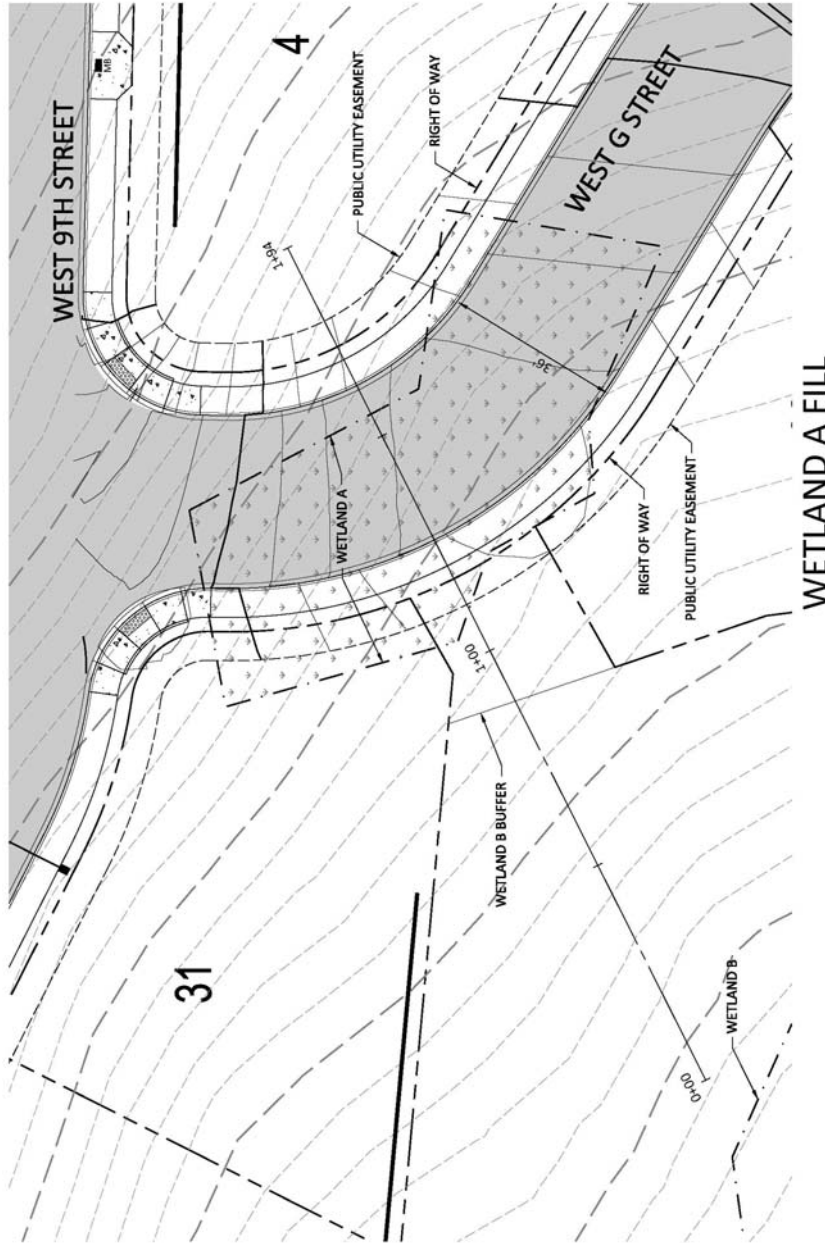
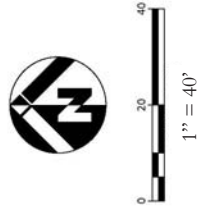


**The Resource Company, Inc.**

ENVIRONMENTAL SERVICES • GIS • HABITAT RESTORATION  
8415 N.E. 8th Avenue, Vancouver, WA 98666 ph: 360-693-4655 fax: 360-699-6242

**PROPOSED ACTIVITIES IN:**  
E. Fork of the Lewis River Watershed  
**LEGAL:** NW ¼ of Section 3, T4N, R1E,  
W. M.,  
**NEAR:** La Center, Washington  
**COUNTY:** Clark County  
**DATE:** September 5, 2016

**Figure 5 of 13**



Corps Reference No.: NWS-2013-739  
 WARAC, LLC

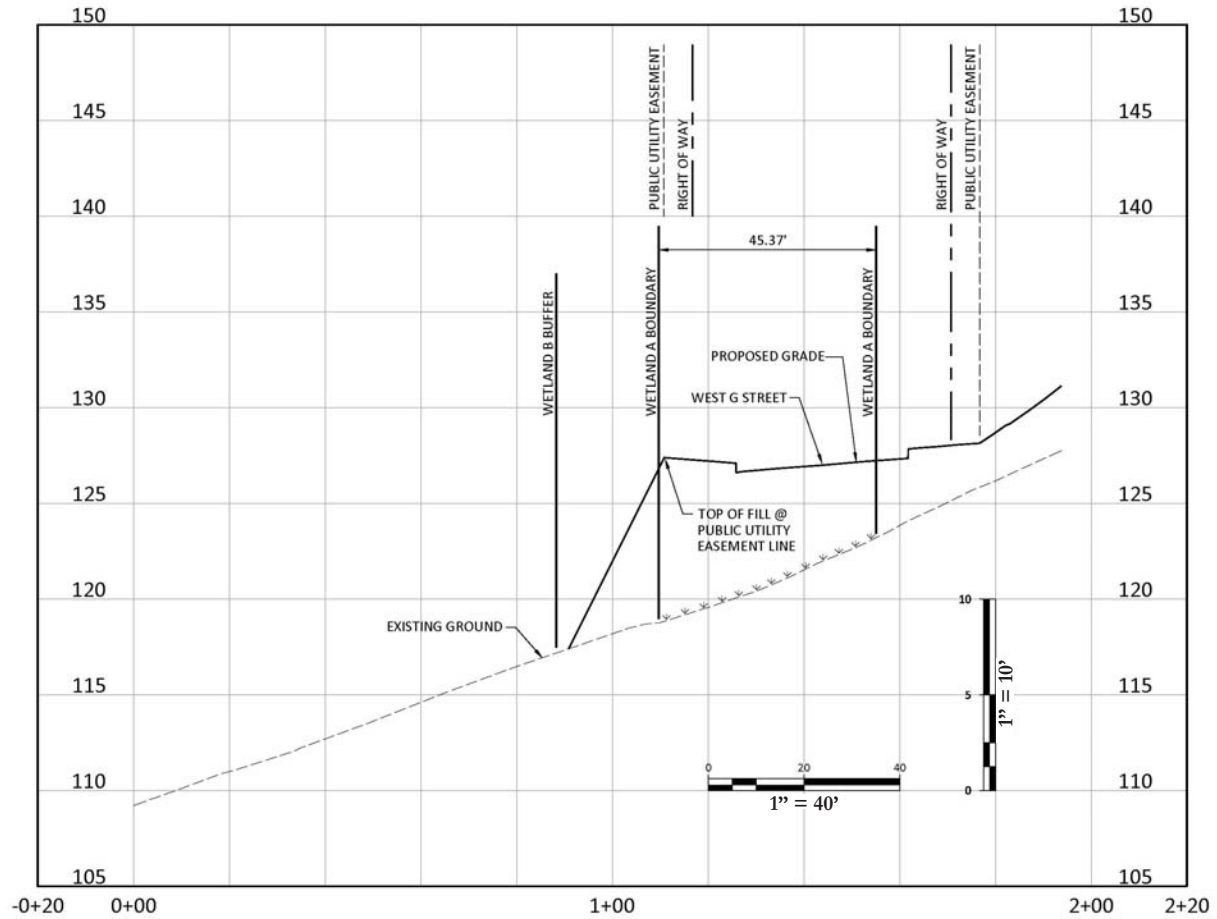
APPLICANT:  
 WARAC, LLC  
 7211 A NE 43rd Avenue  
 Vancouver, WA 98661

PURPOSE: Revised Wetland Mitigation

Wetland A Roadway Fill Details  
 Kays Subdivision Project  
 LaCenter, Washington



PROPOSED ACTIVITIES IN:  
 E. Fork of the Lewis River Watershed  
 LEGAL: NW ¼ of Section 3, T4N, R1E,  
 W. M.,  
 NEAR: La Center, Washington  
 COUNTY: Clark County  
 DATE: September 5, 2016  
 Figure 6 of 13



WETLAND A FILL

Corps Reference No.: NWS-2013-739  
WARAC, LLC

APPLICANT:  
WARAC, LLC  
7211 A NE 43rd Avenue  
Vancouver, WA 98661

PURPOSE: Revised Wetland Mitigation

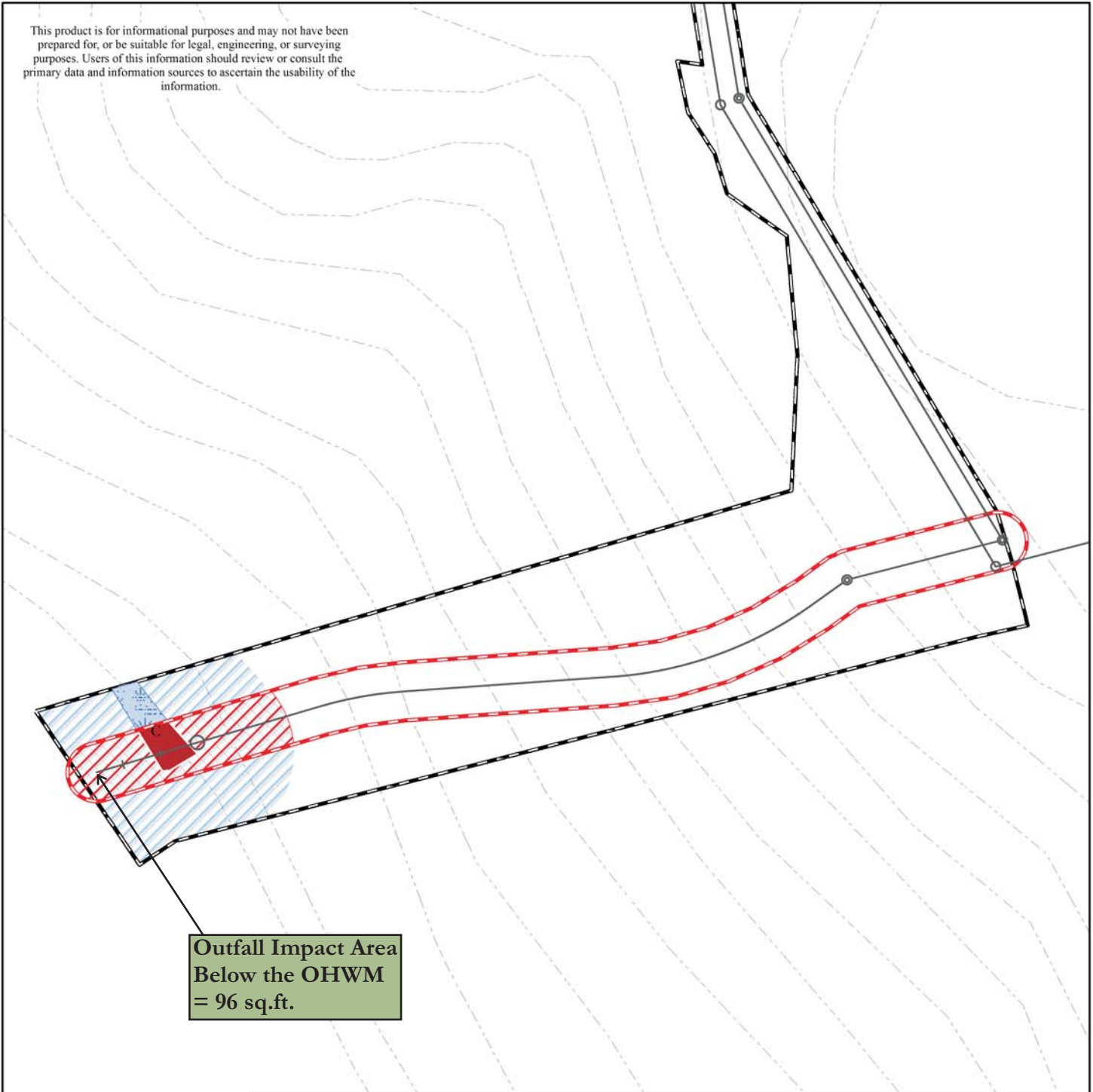
Wetland A Roadway Fill Cross Section  
Kays Subdivision Project  
La Center, Washington



PROPOSED ACTIVITIES IN:  
E. Fork of the Lewis River Watershed  
LEGAL: NW ¼ of Section 3, T4N, R1E,  
W. M.,  
NEAR: La Center, Washington  
COUNTY: Clark County  
DATE: September 5, 2016  
Figure 7 of 13










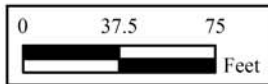
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Outfall Impact Area  
Below the OHWM  
= 96 sq.ft.

**LEGEND**

- |   |  |   |
|---|--|---|
|  Wetland C       |  Proposed Subdivision and Utilities | <b>Temporary Impacts</b>  |
|  Wetland Buffers |  Outfall Construction Zone          |  Category IV Wetland - 440 sq. ft. |
|  Project Area    |  |  Wetland Buffer - 2,970 sq. ft.    |



Corps Reference No.: NWS-2013-739  
WARAC, LLC

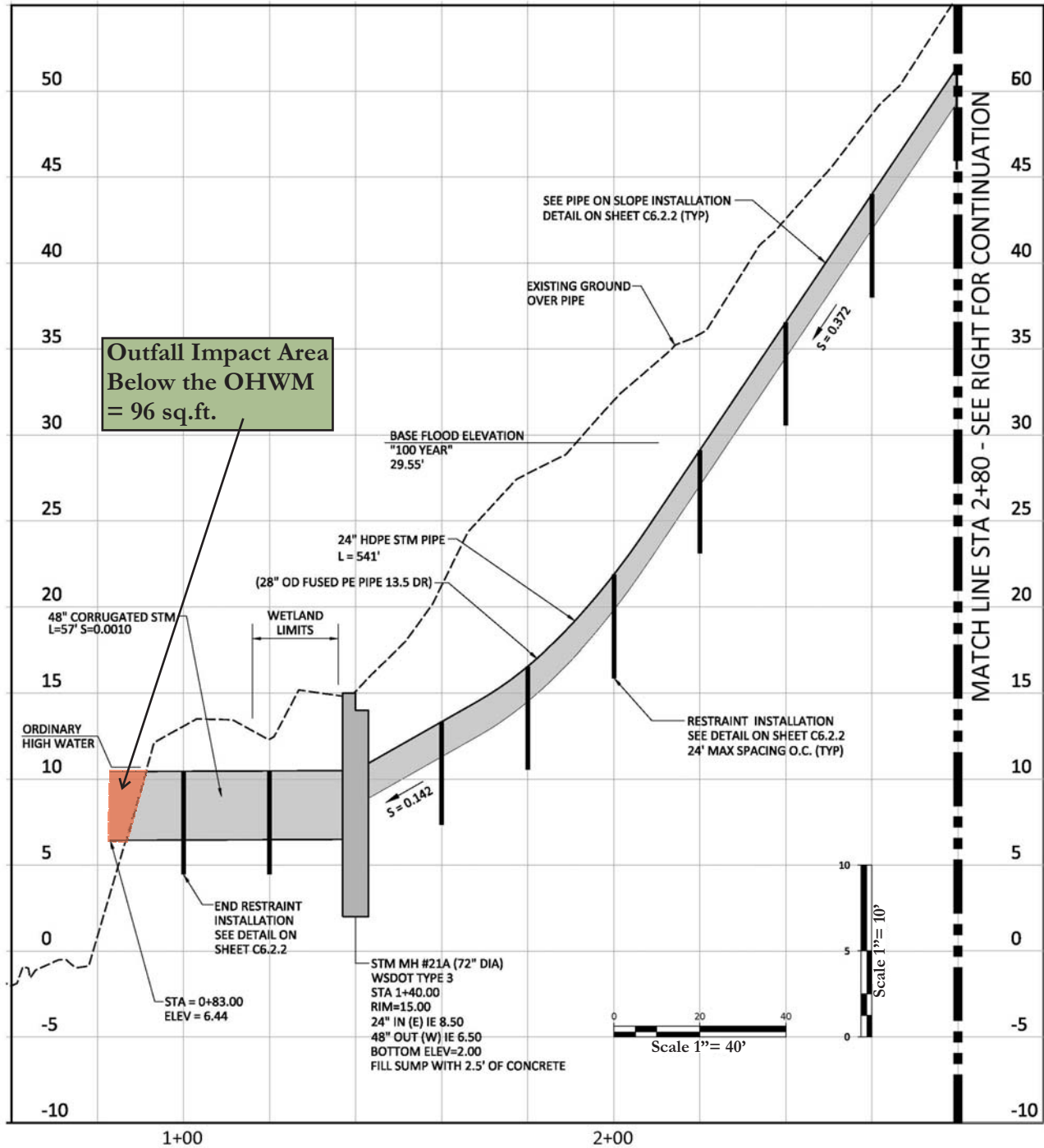
APPLICANT:  
WARAC, LLC  
7211 A NE 43rd Avenue  
Vancouver, WA 98661

PURPOSE: Revised Wetland Mitigation

**Wetland C Temporary Impacts**  
**Kays Subdivision Project**  
**La Center, Washington**



**PROPOSED ACTIVITIES IN:**  
E. Fork of the Lewis River Watershed  
**LEGAL:** NW ¼ of Section 3, T4N, R1E,  
W. M.,  
**NEAR:** La Center, Washington  
**COUNTY:** Clark County  
**DATE:** September 5, 2016  
**Figure 8 of 13**



Corps Reference No.: NWS-2013-739  
WARAC, LLC

APPLICANT:  
WARAC, LLC  
7211 A NE 43rd Avenue  
Vancouver, WA 98661

PURPOSE: Revised Wetland Mitigation

Outfall Pipe Impacts  
Kays Subdivision Project  
La Center, Washington

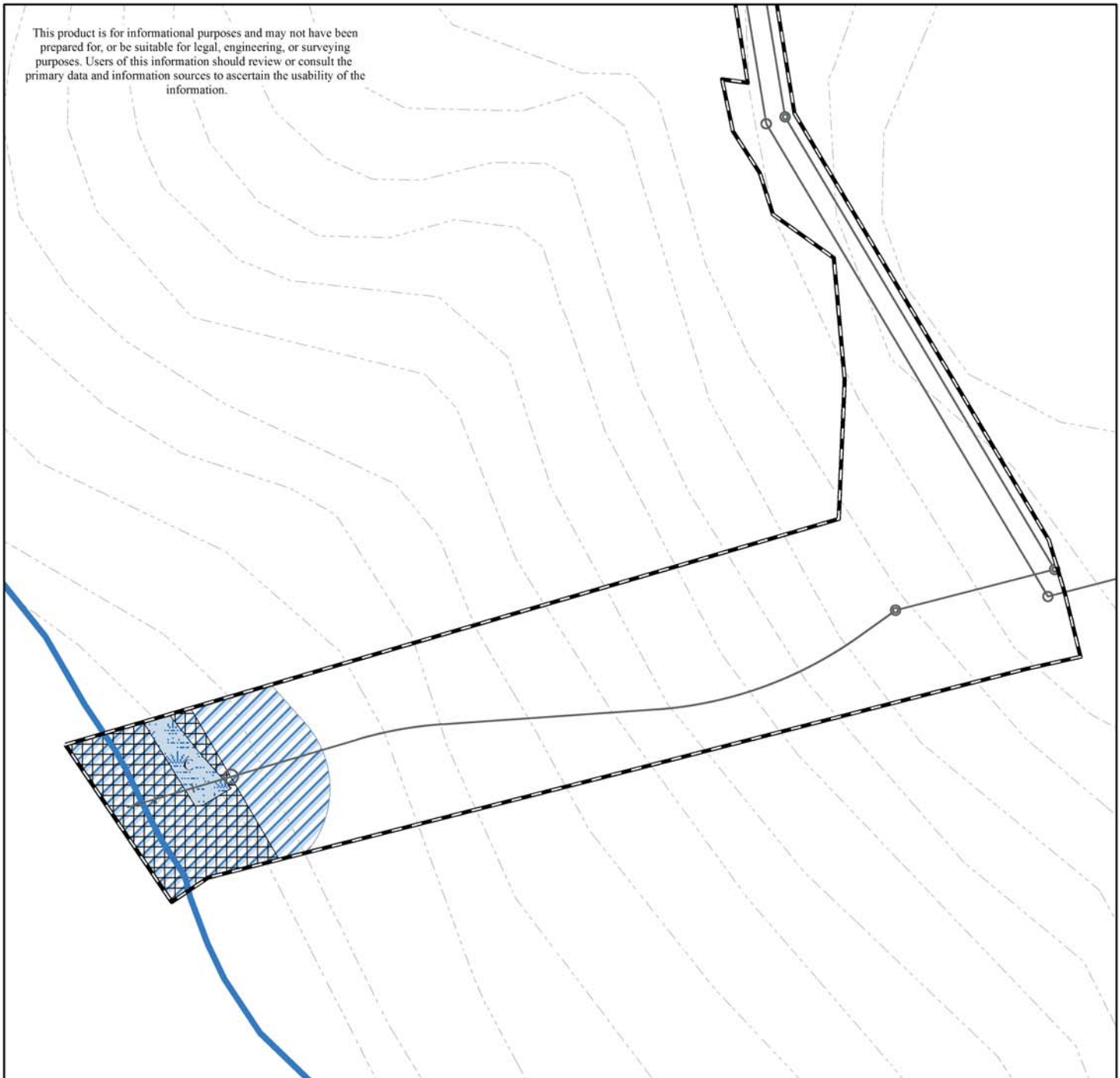


The Resource Company, Inc.





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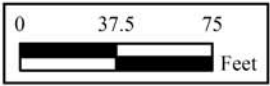
PROPOSED ACTIVITIES IN:  
E. Fork of the Lewis River Watershed  
LEGAL: NW ¼ of Section 3, T4N, R1E,  
W. M.,  
NEAR: La Center, Washington  
COUNTY: Clark County  
DATE: September 5, 2016  
Figure 9 of 13

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**LEGEND**

-  10 Foot Contours
-  Proposed Subdivision and Utilities
-  Ordinary High Water Mark (OHWM)
-  Riparian Habitat Conservation Area Enhancement - 4,630 sq. ft.
-  Wetland C Enhancement Area - 807 sq. ft.
-  Wetland Buffer
-  Project Area



Corps Reference No.: NWS-2013-739  
WARAC, LLC

APPLICANT:  
WARAC, LLC  
7211 A NE 43rd Avenue  
Vancouver, WA 98661

PURPOSE: Revised Wetland Mitigation

**Wetland C and Riparian Enhancement  
Kays Subdivision Project  
La Center, Washington**

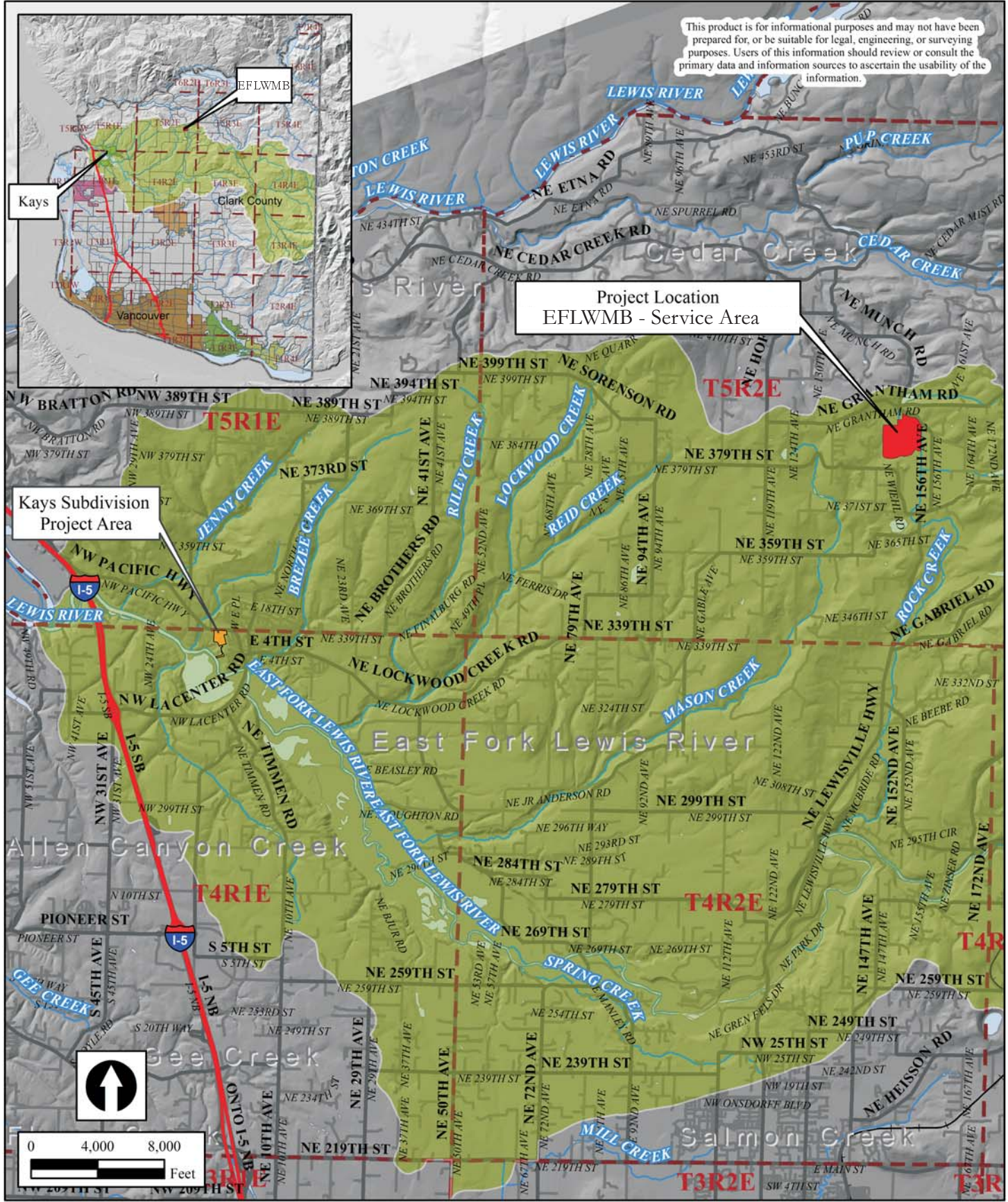


**PROPOSED ACTIVITIES IN:**  
E. Fork of the Lewis River Watershed  
**LEGAL:** NW ¼ of Section 3, T4N, R1E,  
W. M.,  
**NEAR:** La Center, Washington  
**COUNTY:** Clark County  
**DATE:** September 5, 2016

**Figure 10 of 13**



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APPLICANT:  
 WARAC, LLC  
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 Vancouver, WA 98661

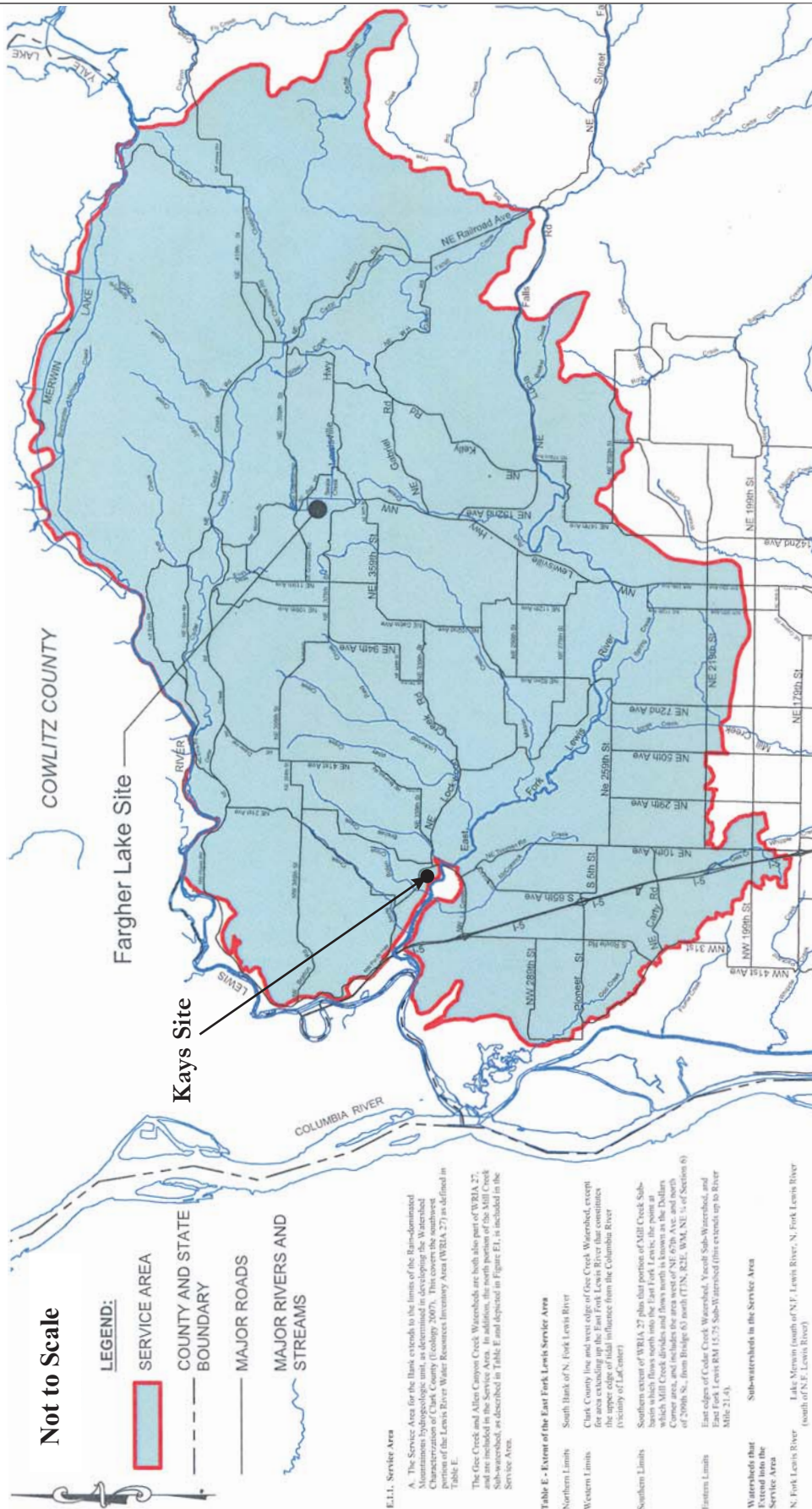
PURPOSE: Revised Wetland Mitigation

East Fork Lewis River Watershed Map  
 Kays Subdivision Project  
 La Center, Washington



PROPOSED ACTIVITIES IN:  
 E. Fork of the Lewis River Watershed  
 LEGAL: NW ¼ of Section 3, T4N, R1E, W. M.,  
 NEAR: La Center, Washington  
 COUNTY: Clark County  
 DATE: September 5, 2016  
 Figure 11 of 13





**NOTES:**  
 1. STATE COUNTY ROADS, RIVERS AND STREAM BOUNDARIES FROM ECOLOGY WEBSITE:  
<http://www.ecy.wa.gov/education/geo/landuse/landuse.html>  
 2. SERVICE AREA BOUNDARY BASED ON MAP PREPARED BY STEPHEN STANLEY WETLAND RESTORATION BIOLOGIST WASHINGTON DEPARTMENT OF ECOLOGY SEA PROGRAM.  
 3. MAP PREPARED BY ECOLOGICAL LAND SERVICES, INC., DECEMBER, 2007 AND JANUARY, 2010.

Not to Scale

**LEGEND:**

- SERVICE AREA
- COUNTY AND STATE BOUNDARY
- MAJOR ROADS
- MAJOR RIVERS AND STREAMS

E.L.L. Service Area  
 A. The Service Area for the Blank extends to the limits of the Rams-dominated  
 Maintenance hydrologic unit, as determined by developing the Watershed  
 boundary for the Lewis River Water Resources Inventory Area (WRIA 27) as defined in  
 Table E.  
 The Gre Creek and Allen Canyon Creek Watersheds are both also part of WRIA 27.  
 Subwatershed, as described in Table E and depicted in figure E1, is included in the  
 Service Area.

**Table E - Extent of the East Fork Lewis Service Area**  
 Northern Limits  
 South bank of N. Fork Lewis River  
 Clark County line and west edge of Gre Creek Watershed, except  
 for area extending up the East Fork Lewis River that constitutes  
 (vicinity of La Center)  
 Southern Limits  
 Southern extent of WRIA 27 plus that portion of Mill Creek Sub-  
 basin which flows north into the East Fork Lewis; the portion of  
 the Lewis River Watershed that is located south of the Mill Creek  
 Currier area, and includes the area west of NE 67th Ave. and north  
 of 209th S., from Bridge 63 north (TIN; R2E, W4A, NE 1/4 of Section 6)  
 Eastern Limits  
 East edge of Cedar Creek Watershed, Youth Sub-Watershed, and  
 portion of Cedar Creek Watershed that extends up to River  
 Mile 21.4.

**Subwatershed in the Service Area**  
 Lake Merwin (south of N.F. Lewis River, N. Fork Lewis River  
 (south of N.E. Lewis River)  
 E. Fork Lewis River (R1E, T4N, 7-24 and 15-75, Jones Creek, Ribner  
 Creek, Lockwood Creek, Mount Creek, Rock Creek, North Dean  
 Creek, McCornick Creek, Mill Creek, East Fork, Youth Creek  
 Cedar Creek Upper, Cedar Creek Middle, Cedar Creek Lower, Pop  
 Creek, Chalmers Creek  
 Allen Canyon Creek  
 Gre Creek

Corps Reference No.: NWS-2013-739  
 WARAC, LLC  
 APPLICANT:  
 WARAC, LLC  
 7211 A NE 43rd Avenue  
 Vancouver, WA 98661  
 PURPOSE: Revised Wetland Mitigation

**EFLWMB Service Area**  
**Kays Subdivision Project**  
**La Center, Washington**

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**PROPOSED ACTIVITIES IN:**  
 E. Fork of the Lewis River Watershed  
**LEGAL:** NW ¼ of Section 3, T4N, R1E,  
 W. M.,  
**NEAR:** La Center, Washington  
**COUNTY:** Clark County  
**DATE:** September 5, 2016  
**Figure 12 of 13**





Wetland A



Wetland A



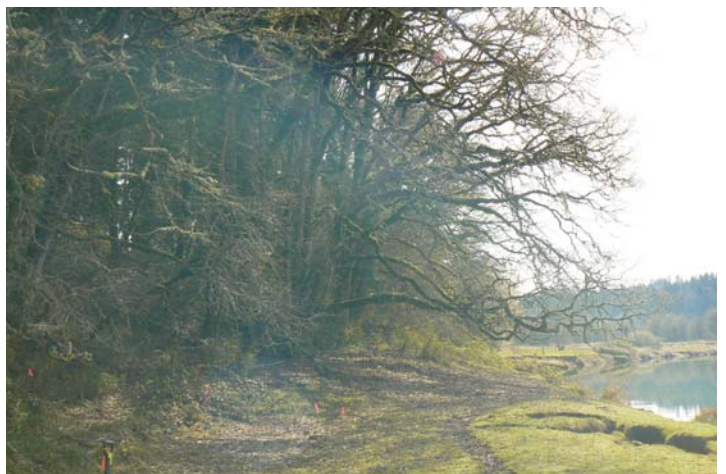
Wetland B



Wetland B



Wetland C



Wetland C

Corps Reference No.: NWS-2013-739  
WARAC, LLC

APPLICANT:  
WARAC, LLC  
7211 A NE 43rd Avenue  
Vancouver, WA 98661

PURPOSE: Revised Wetland Mitigation

Project Photographs  
Kays Subdivision Project  
La Center, Washington



PROPOSED ACTIVITIES IN:  
E. Fork of the Lewis River Watershed  
LEGAL: NW ¼ of Section 3, T4N, R1E,  
W. M.,  
NEAR: La Center, Washington  
COUNTY: Clark County  
DATE: September 5, 2016  
Figure 13 of 13