Camas Meadows Hole 9 Subdivision Critical Areas Report and Priority Oregon White Oak Preliminary Mitigation Plan

Date:	March 2023
Prepared for:	Romano Development, Inc. 4660 NE 77th Avenue, Suite 200 Vancouver, WA 98662
Prepared by:	AKS Engineering & Forestry Stacey Reed, Senior Scientist
Study Area:	4525, NW Camas Meadows Drive, Camas, Clark County; Clark County Parcels 175980000, 172973000, 172963000, 986035734, 986035733, 172970000, & 986026906
AKS Job Number:	9030

AKS ENGINEERING & FORESTRY

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Vancouver, WA 98682
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A. Introduction

AKS Engineering & Forestry, LLC (AKS) was contracted by the Romano Development (Applicant) to prepare this preliminary Priority Oregon White Oak Mitigation Plan for the Camas Meadows Hole 9 Subdivision Project. The project site is ±13.81 acres in size and addressed at 4525 NW Camas Meadows Drive in Camas, Clark County, Washington (Figures 1 and 2A and 2B; latitude 45.624553, longitude -122.408762). The project, referred to as Camas Meadows Hole 9, consists of single-family attached and detached homes and one commercial lot adjacent to the Camas Meadows Golf Course.

Seven individual Oregon white oak trees with 20 inches or greater diameter breast height (DBH) were mapped on the project site as Fish and Wildlife Habitat Conservation Area requiring compliance with Chapter 16.61 of the City of Camas Municipal Code (CMC). No stands of Oregon white oak greater than 1 acre were observed, nor are there any Oregon white oak snags. No wetlands, waters, or other priority species or habitats are mapped on the site.

The project requires the unavoidable removal of five Priority Oregon white oaks trees, requiring a Critical Areas Permit and mitigation to ensure no net loss of locally important fish and wildlife habitat functions and values within the City of Camas (City).

To ensure no net loss of habitat, the project includes both on-site and off-site habitat enhancement mitigation. Washington State Department of Fish and Wildlife (WDFW) recommends a minimum 6:1 habitat enhancement ratio, based on canopy lost. To achieve this ratio on-site habitat enhancement within open space tracts containing preserved Priority Oregon white oaks and off-site habitat enhancement located within an existing open space located on the Two Creeks at Camas Meadows Condominium site. The Two Creeks at Camas Meadows Condominium open space tract is located less than a quarter mile north of the project site and is currently owned by the applicant.

Oregon White Oak habitat enhancement mitigation will include planting a combination of Oregon white oak seedlings, planting an understory of native woody fruit-bearing shrubs to provide wildlife food sources, and long-term maintenance and monitoring to ensure habitat enhancement meets prescribed mitigation goals and objectives, including management of non-native invasive vegetation species.

This report addresses City of Camas Code of Ordinances Chapter 16.61 Fish and Wildlife Habitat Conservation Areas. No other critical areas (Critical Aquifer Recharge Areas, frequently flooded areas, wetlands, or geologically hazardous areas) are addressed in this report.

B. Site Description and Land Use History

The project site is currently undeveloped. Based on Clark County Maps Online historic aerial photographs, the site was logged sometime between 1996 and 2000. The site is currently dominated by scattered Douglas-fir (*Pseudostuga menziesii*), bigleaf maple (*Acer macrophyllum*), Oregon white oak (*Quercus garryana*), western hemlock (*Tsuga heterophylla)*, and young red alder (*Alnus rubra,* FAC) trees. The understory was dominated mainly by dense thickets of invasive Himalayan blackberry (*Rubus armeniacus*, FAC).

The study area lies between the Lacamas Lake sub-watershed and Dwyer sub-watershed of the Lacamas Creek watershed, located within the Salmon-Washougal Water Resource Inventory Area (WRIA).

Background Mapping

A desktop review was conducted by AKS to assess potential critical areas. AKS Arborist Bennett Kocsis conducted a site visit on March 22, 2022 and January 11, 2023. AKS Natural Resources Specialist conducted a site visit on November 2, 2022.

Soils

According to the Natural Resources Conservation Service (NRCS) Clark County Area Soil Survey Map (Figure 3), the following non-hydric soil units are mapped within the study area:

- Powell silt loam, 8 to 20 percent slopes (Unit PoD); Non-hydric
- Powell silt loam, 0 to 8 percent slopes (Unit PoB); Non-hydric
- Hesson clay loam, 0 to 8 percent slopes (Unit HcB); Non-hydric
- Hesson clay loam, 8 to 20 percent slopes (Unit HcD); Non-hydric

Wetland and Waters Mapping

According to the US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Map, there are no wetlands or waters mapped in the project site or within 300 feet (Figure 4, Appendix A). According to Clark County's MapsOnline portal, no 'modeled and presence wetlands' or 'permitted wetlands' are mapped in the project site or within 300 feet (Figure 5).

Based on background mapping, including NRCS hydric soils (Figure 3) and Clark County Modeled and Permitted Wetland mapping (Figure 5) a potential wetland is located just over 300 feet to the north of the site, on the Camas Meadows Golf Course. According to City of CMC 16.53.040 wetland buffers for Category I or II wetlands with high habitat scores require a maximum 300-foot buffer. The potential wetland is over 300 feet from the edge of the project area; therefore, wetland buffer associated with potential off-site wetland does not appear to extend onto the project site.

DNR Mapping

According to Washington State Department of Natural Resources (DNR) mapping, no waters are mapped on-site or within 300 feet of the project site (Figure 6). No wetlands of high conservation value are mapped within or adjacent to the study area by DNR.

WDFW Priority Habitat and Species Mapping

According to a Washington Department of Fish and Wildlife (WDFW) and a Clark County Maps Online Priority Habitat and Species (PHS) online query, oak woodland is mapped within the project area (Figure 7). AKS confirmed the presence of individual Oregon white oak trees within the project area. According to the WDFW PHS mapping, "Caves or Cave-Rich Areas" are mapped in the project township. During the site visit, no caves or potential caves were identified on the project site.

C. Oregon White Oaks

Per CMC Chapter 16.61.010.3.a.i, individual Oregon white oak trees with at least a 20-inch DBH or greater are regulated as locally important fish and wildlife habitat conservation areas. According to WDFW, single oaks in an urban setting are considered priority if they are particularly valuable to fish and wildlife. To assess an individual tree's potential habitat value to fish and wildlife, the current WDFW criteria considers the number of cavities, trees with a large DBH (>20 inches DBH), trees that are used by threatened, endangered, or priority species, and/or trees that have a large canopy.

Seven Oregon white oak trees identified as locally significant according to CMC Chapter 16.61.010.3.a.i were observed in the project area (Figure 8). The observed characteristics of the Oregon white oaks present in the project area are discussed in detail in the attached AKS Arborist report (Appendix A). According to the AKS Arborist report, only one Oregon white oak had a few cavities with decay (Tree number 10131) although is located on a raised berm surrounded on three sides by concrete. The remaining on-site Oregon white oaks are surrounded by invasive patches of Himalayan blackberry (*Rubus armeniacus*) or occasional individual hazelnut (*Corylus cornuta*) shrubs. There were several Oregon white oak trees with broken limbs, a suppressed/not well-formed/one-sided canopy, and/or a significant lean noted (trees numbers 10157, 10158, 10903, and 10916 in the arborist report). Galls were present on multiple oaks on-site. No fungal conks or disease was observed on any of the oaks.

No nests were observed in the oaks during AKS site visits and there is no evidence that the oaks are used by any priority species. Acorns were observed on the ground below oaks during a November 2022 site visit. The driplines associated with the on-site Priority Oregon white oak trees were delineated by AKS certified Arborists and are shown in Figure 8.

D. Locally Significant Oregon White Oak Impacts

This project requires removal of five individual priority Oregon white oak trees. The single oaks that will be removed range from 20 inches DBH to 31 inches DBH, totaling ±6,521 square feet of canopy disturbance.

Oregon White Oak Avoidance and Minimization

Preliminary layouts evaluated included removal of all Oregon white oaks on the project site. AKS worked with the applicant to revise the layout to avoid as many locally significant Oregon white oaks as practical. This included a revision to the layout and a re-evaluation of site grading, including consideration for retaining walls where feasible and shifting to underground stormwater detention to reduce grading needs on the east side of the site.

Unavoidable removal of five priority oaks trees are necessary for the construction of public street and alley alignments. The City of Camas required the location of the three access points due to intersection spacing requirements and alignment with existing roads off NW Camas Meadows Drive, resulting in unavoidable removal of 21-inch DBH oak (tree number 10880). Camas code requirements for lot depth, alley width, and intersection spacing dictated the location of NW A Drive, requiring removal of the 20-inch DBH oak (tree number 109016). Streets with driveway access are only allowed a maximum 12% grade. This requirement had a ripple affect across the site, requiring some portions of the site to be raised and other portions to be lowered, requiring the unavoidable removal of the 31-inch DBH oak (tree number 10407).

A retaining wall along NW A Drive would be required to preserve 26-inch and 24-inch DBH oak trees (tree numbers 10903 and 10131) on Lots 41 and 21, from road construction grading. A retaining wall would be infeasible due to the proximity to right-of-way and potential height of a wall. In addition, the installation and elevation of the retaining wall in relation to the elevation of the NW A Drive, will likely impose mortality due to water suffocation, diseases, and overall damage to the root system.

The applicant researched an alternative layout that included the preservation of trees number 10131 (24" and 18" DBH) by relocating lot 21 to the north. However, these trees are surrounded by existing concrete.

Removal of the concrete to enhance the understory habitat would require excavation which according to the arborist would compromise the root system and.

To minimize impacts to the remaining Oregon white oak on-site during construction, a certified arborist will be on-site during construction to ensure guidelines for tree preservation are being met. Each tree and the surrounding root zone will be fenced off and remain in place through construction. Long term monitoring will occur to ensure no tree mortality has occurred due to adjacent construction activities.

Preliminary Oregon White Oak Mitigation Plan

To mitigate for the necessary removal of five Oregon white oak trees (requiring +/-6,521 square feet of canopy disturbance) the project will include both on-site and off-site habitat enhancement mitigation.

At a preliminary 1:6 habitat enhancement mitigation ratio (based on canopy lost to enhancement area, the project requires +/-39,126 square feet of enhancement mitigation area. To achieve this, the site plan includes ±17,958 square feet of on-site habitat enhancement opportunity, with the remaining +/-21,168 square feet of enhancement habitat mitigation being achieved on the Two Creeks at Camas Meadows Condominium open space tract (Figure 9).

The existing condition of the on-site habitat enhancement mitigation area is dominated by dense Himalayan blackberry thickets. The preliminary proposed enhancement mitigation includes removal of the Himalayan blackberry and other non-native invasive vegetation species and the installation of Oregon white oak seedlings and native fruit-bearing shrubs. On-site enhancement will include planting acorns harvested from on-site oak trees. Figure 8 shows the proposed site plan, impacts to individual priority Oregon white oak trees, and the proposed on-site habitat enhancement mitigation areas.

The proposed remaining off-site mitigation area is located within an open space tract associated with the Two Creeks at Camas Meadows Condominium, located approximately one quarter mile to the north of the project site (Figure 9). The off-site enhancement mitigation area is located along the Lacamas Heritage Trail and is contiguous with a large corridor of existing Oregon white oak stands, including oak mitigation plantings for the Two Creeks Condominium project. Therefore, this site holds high potential for wildlife habitat function enhancement value that the proposed Oregon white oak habitat enhancement will provide. Enhancement of this area will provide a net habitat gain within the City of Camas.

The same mitigation enhancement measures are recommended both on-site and off-site areas which includes removing non-native invasive vegetation, planting Oregon white oak seedlings, and installation of native fruit-bearing shrubs.

A detailed Oregon white oak habitat enhancement mitigation monitoring and long-term maintenance plan, including mitigation timing and performance standards, will be submitted with final engineering review. To ensure long-term maintenance of the on-site preserved tracts, literature will be provided in the subdivisions CC&Rs to educate future homeowners on suitable maintenance activities within the preservation tracts to ensure long-term survival of oak habitat mitigation.

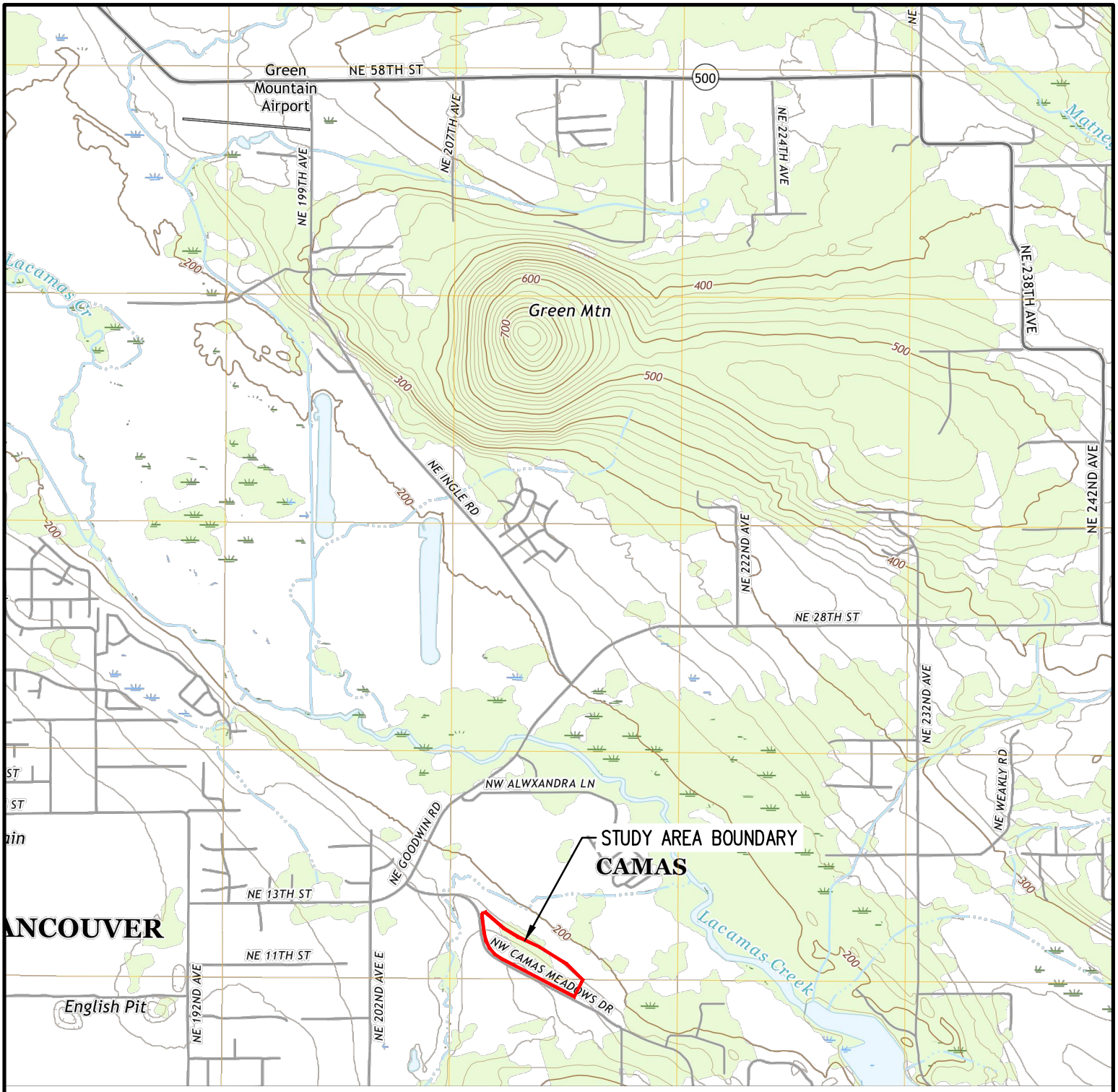
E. Statement of Preparation

This report documents the investigation, best professional judgment, and conclusions of the investigator. It is correct and complete to the best of the author's knowledge. This assessment was prepared in accordance with the City's environmental protection ordinance (Chapter 16.61). Information contained in this document should be considered preliminary and used at the reader's risk until it has been reviewed and approved in writing by the appropriate local, state, and/or federal agencies with jurisdiction over natural resources on the site.

F. List of Preparers

Rebecca Schilling
Natural Resource Specialist
Report Preparation

Stacey Reed, PWS
Senior Scientist
Report Preparation



USGS 7.5' TOPOGRAPHIC SERIES QUADRANGLE:
LACAMAS, WA (2020)

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SCALE: 1"= 2000 FEET

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ORIGINAL PAGE SIZE: 8.5" x 11"

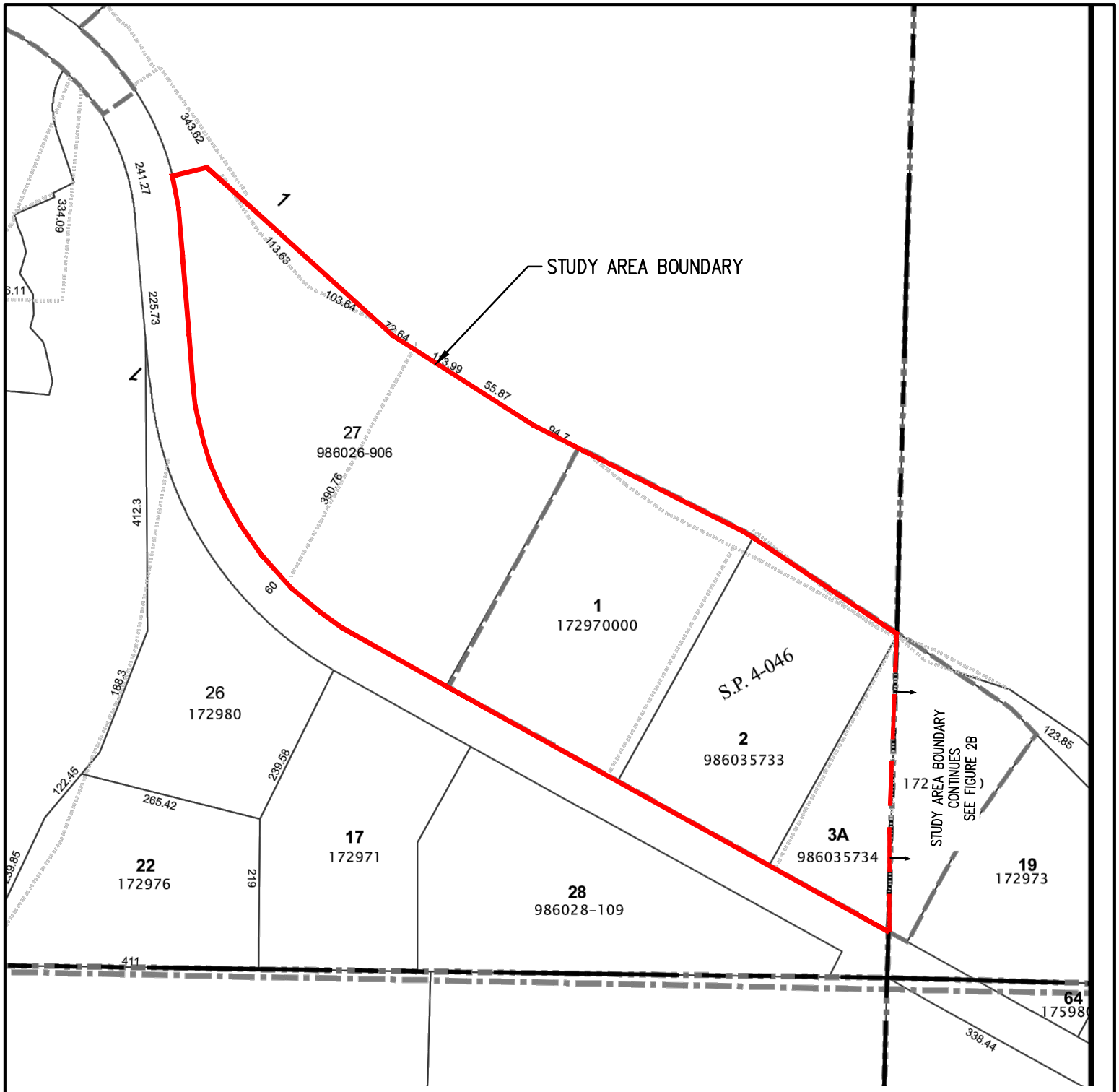
DATE: 03/06/2023

USGS VICINITY MAP
CAMAS MEADOWS SUBDIVISION CRITICAL AREAS ASSESSMENT

FIGURE 1

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
P: 360.882.0419 F: 360.882.0426 aks-eng.com

DRWN: RAS
CHKD: SKT
AKS JOB: 9030



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CLARK COUNTY
SEC. 29, T. 2N., R. 3E., W.M.
PARCEL NO. 172970000, 986026906,
986035733, AND 986035734

DATE: 03/06/2023

PARCEL MAP
CAMAS MEADOWS SUBDIVISION CRITICAL AREAS ASSESSMENT

FIGURE **2A**

AKS ENGINEERING & FORESTRY, LLC
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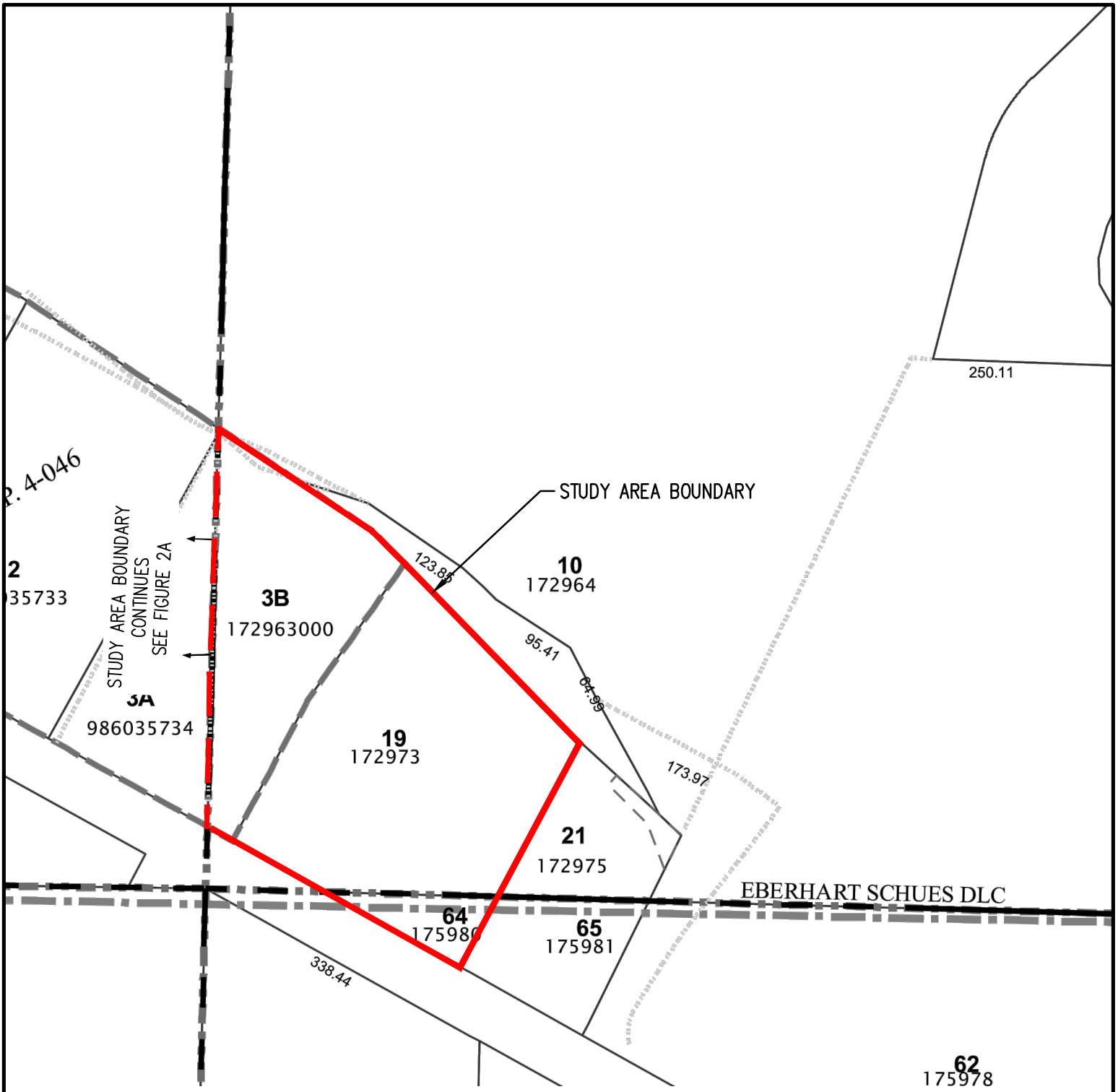

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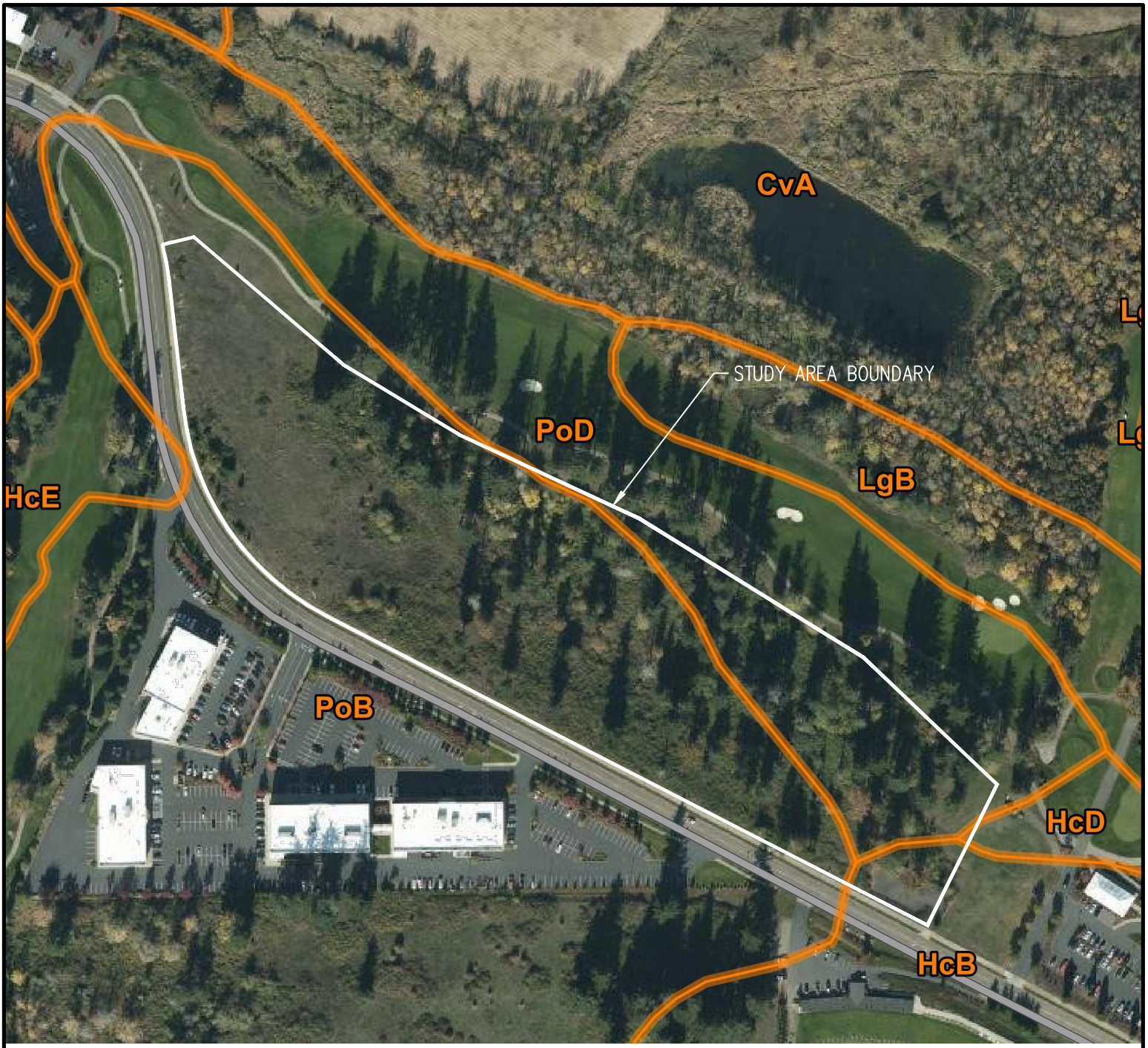
CLARK COUNTY
SEC. 28, T. 2N., R. 3E., W.M.
PARCEL NO. 172963000,
172973000, AND 175980000

DATE: 03/06/2023

PARCEL MAP CAMAS MEADOWS SUBDIVISION CRITICAL AREAS ASSESSMENT	FIGURE 2B
AKS ENGINEERING & FORESTRY, LLC 9600 NE 126TH AVE, STE 2520 VANCOUVER, WA 98682 P: 360.882.0419 F: 360.882.0426 aks-eng.com	DRWN: RAS CHKD: SKT AKS JOB: 9030

DWG: 9030 BACKGROUND FIGURES | FIGURE 2B



MAP UNIT SYMBOL	MAP UNIT NAME
HCB	HESSON CLAY LOAM, 0% TO 8% SLOPES; NON-HYDRIC
HCD	HESSON CLAY LOAM, 8% TO 20% SLOPES; NON-HYDRIC
POB	POWELL SILT LOAM, 0% TO 8% SLOPES; NON-HYDRIC
POD	POWELL SILT LOAM, 8% TO 20% SLOPES; NON-HYDRIC

NRCS WEB SOIL SURVEY FOR
CLARK COUNTY

DATE: 03/06/2023

N

SCALE: 1"= 250 FEET

250 0 50 125 250

ORIGINAL PAGE SIZE: 8.5" x 11"

NRCS SOIL SURVEY MAP
CAMAS MEADOWS SUBDIVISION CRITICAL AREAS ASSESSMENT

FIGURE 3

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Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

US FISH & WILDLIFE SERVICE
NATIONAL WETLAND INVENTORY

N

SCALE: 1" = 250 FEET

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ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 03/06/2023

NATIONAL WETLAND INVENTORY MAP
CAMAS MEADOWS SUBDIVISION CRITICAL AREAS ASSESSMENT

FIGURE 4

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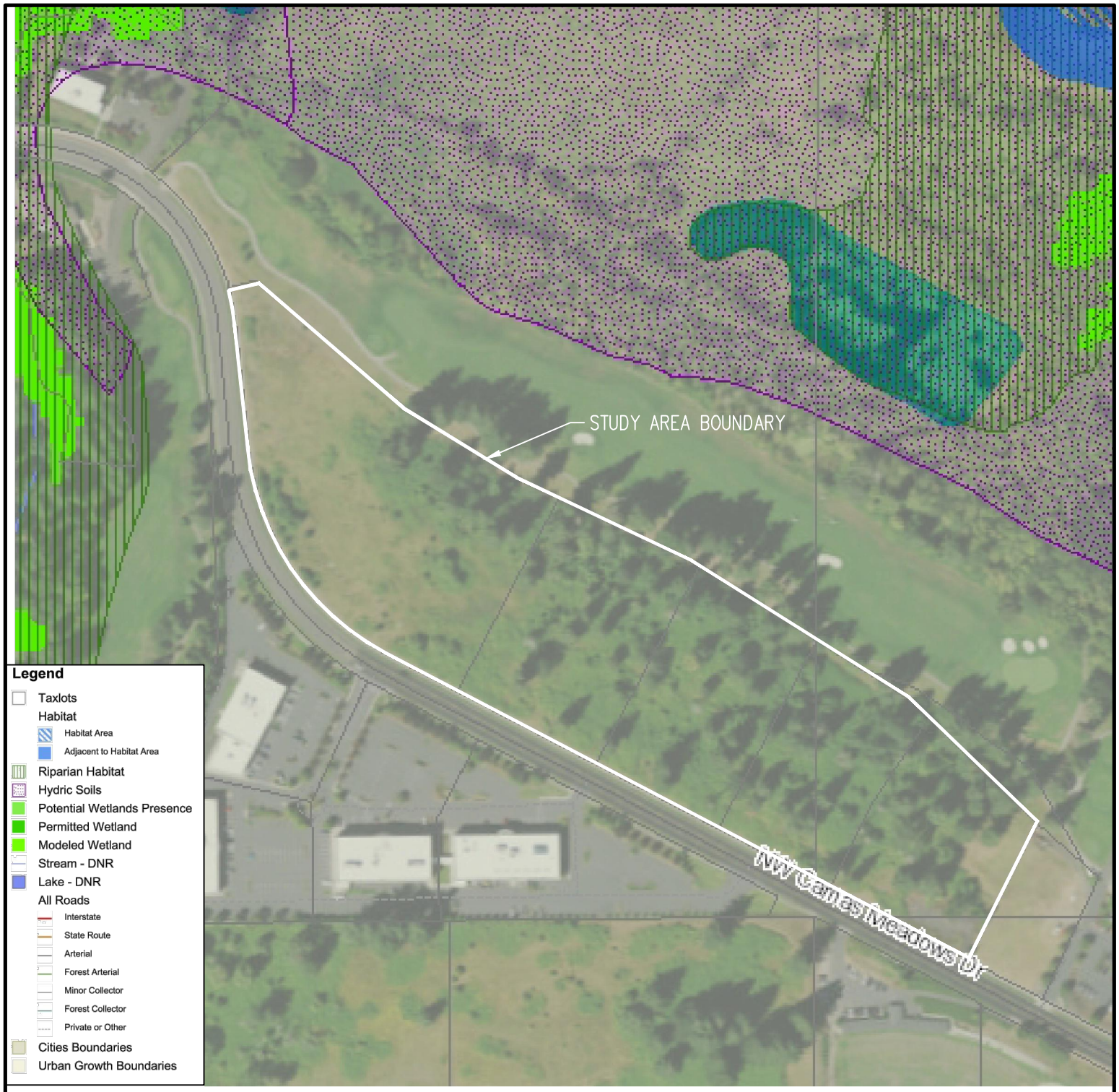
CHKD: SKT
AKS JOB: 9030



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CLARK COUNTY MAPS ONLINE

DATE: 03/06/2023

SCALE: 1"= 250 FEET

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ORIGINAL PAGE SIZE: 8.5" x 11"

MODELED AND PERMITTED WETLAND MAP
CAMAS MEADOWS SUBDIVISION CRITICAL AREAS ASSESSMENT

FIGURE 5

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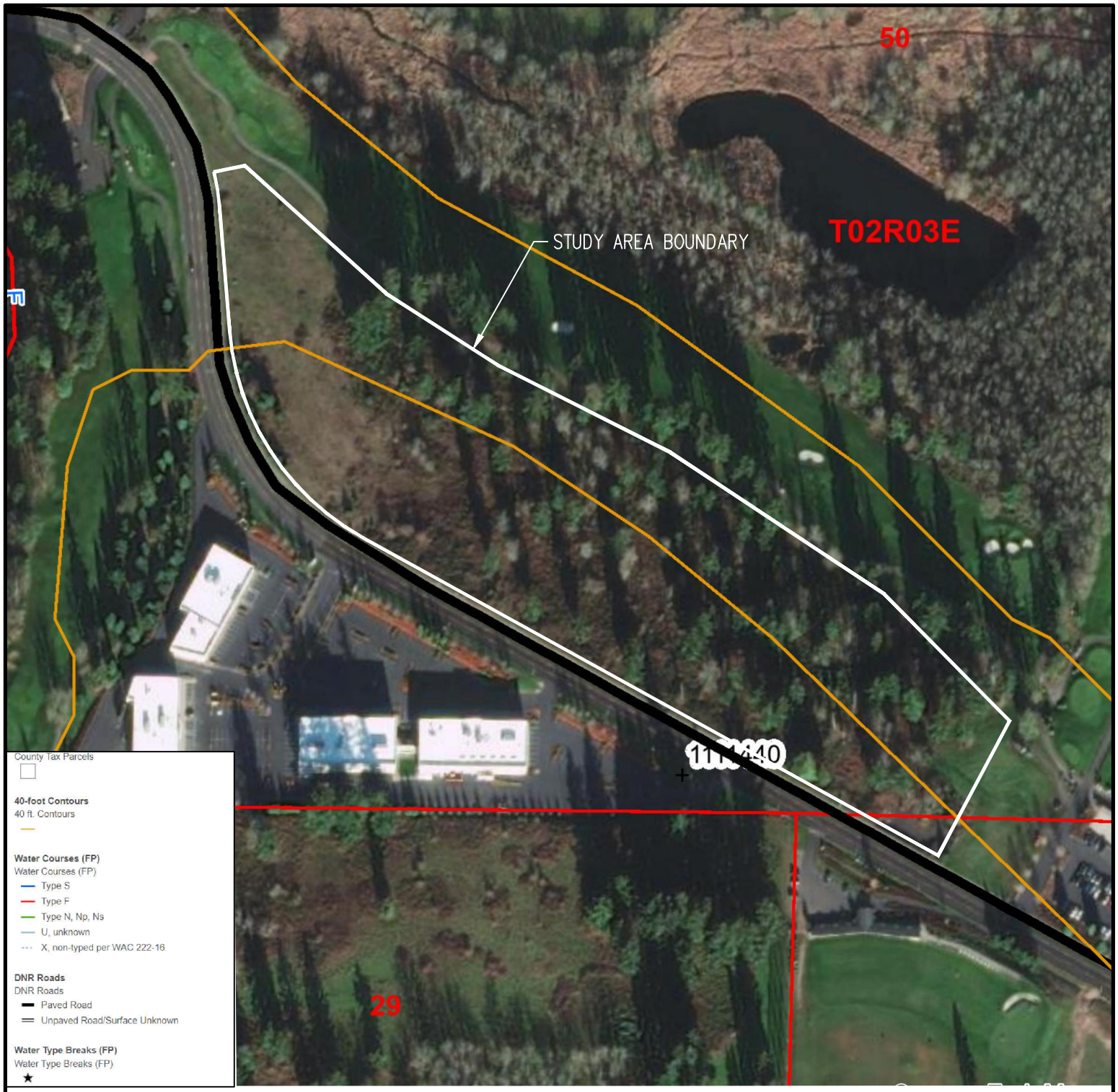
CHKD: SKT
AKS JOB: 9030



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ORIGINAL PAGE SIZE: 8.5" x 11"

WASHINGTON DEPARTMENT OF NATURAL RESOURCES

DATE: 03/06/2023

DNR WATER TYPE MAP
CAMAS MEADOWS SUBDIVISION CRITICAL AREAS ASSESSMENT

FIGURE 6

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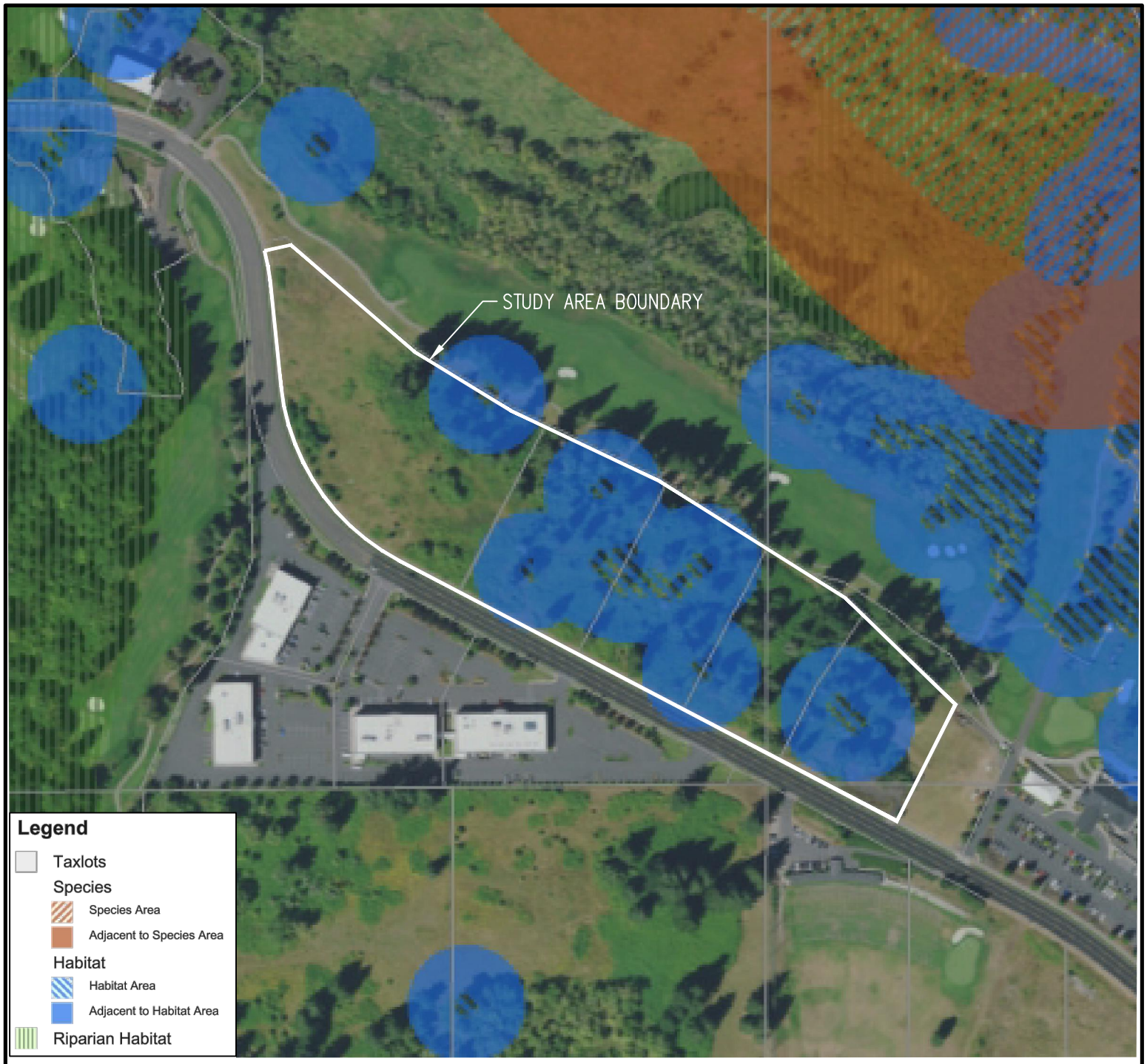
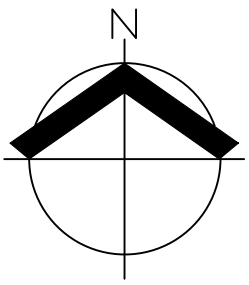
CHKD: SKT
AKS JOB: 9030



CLARK COUNTY MAPS ONLINE



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ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 03/06/2023

PRIORITY HABITAT AND SPECIES MAP
CAMAS MEADOWS SUBDIVISION CRITICAL AREAS ASSESSMENT

FIGURE 7

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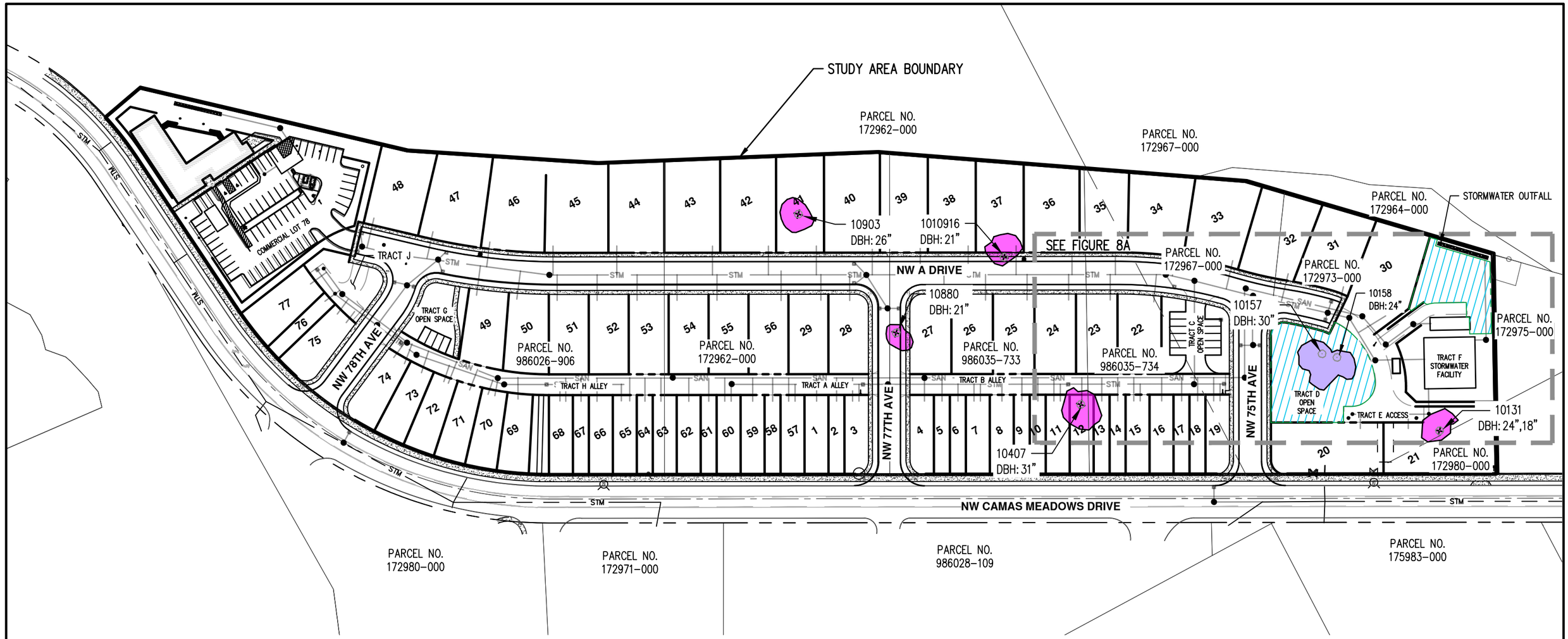
CHKD: SKT
AKS JOB: 9030



LEGEND (COLOR COPY) :

EXISTING PRIORITY INDIVIDUAL OREGON WHITE OAK DRIPLINES TOTAL AREA: 9,905 SF (0.23 ACRES±)

PRIORITY INDIVIDUAL OREGON WHITE OAK CANOPY DRIPLINE AREA TO BE REMOVED: 6,521 SF± (0.15 ACRES±)

PRIORITY INDIVIDUAL OREGON WHITE OAK CANOPY DRIPLINE AREA TO REMAIN: 2,854 SF (0.07 ACRES±)

TOTAL OAK HABITAT ENHANCEMENT AREAS: 39,126 SF± (0.90 ACRES)
ON-SITE TRACT D: 10,949 SF± (0.25 ACRES±)
ON-SITE TRACT F: 7,009 SF± (0.16 ACRES±)
OFF-SITE TRACT: 21,168 SF± (0.49 ACRES±) *SEE FIGURE 9

TREES TO BE REMOVED

DRIPLINES FOR OREGON WHITE OAK TREES SHOWN WERE DELINEATED BY AKS CERTIFIED ARBORISTS.

SCALE: 1"=120 FEET

120 0 24 60 120

ORIGINAL PAGE SIZE: 11" X 17"

DATE: 03/15/2023

SITE PLAN, PRIORITY WHITE OAK REMOVAL, AND PRELIMINARY ON-SITE OAK MITIGATION AREAS

CAMAS MEADOWS SUBDIVISION CRITICAL AREAS ASSESSMENT

FIGURE 8

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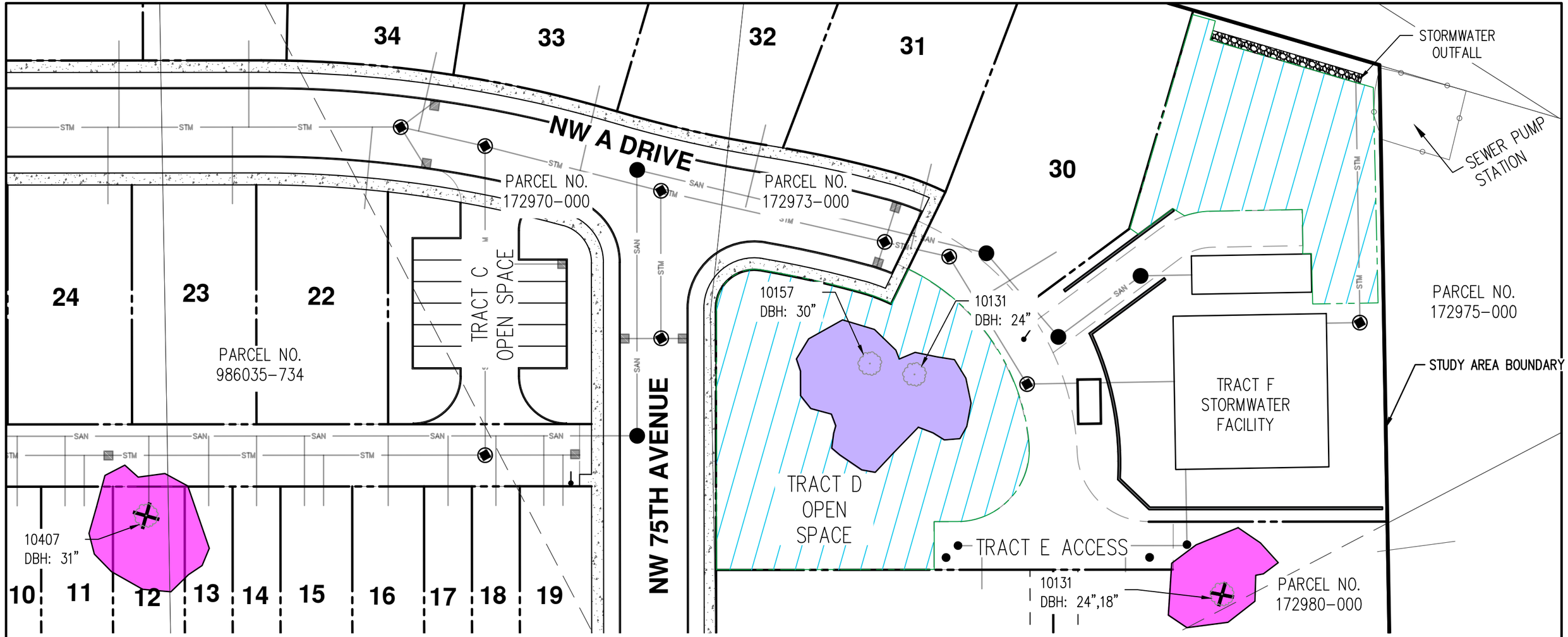
VANCOUVER, WA 98682
360.882.0419 WWW.AKS-ENG.COM

DRWN: RAS
CHKD: SAR
AKS JOB: 9030

DWG: 9030 CAA SITE PLAN | FIGURE 8



LEGEND (COLOR COPY) :

EXISTING PRIORITY INDIVIDUAL OREGON WHITE OAK DRIPLINES TOTAL AREA: 9,905 SF (0.23 ACRES±)

PRIORITY INDIVIDUAL OREGON WHITE OAK CANOPY DRIPLINE AREA TO BE REMOVED: 6,521 SF± (0.15 ACRES±)

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TOTAL OAK HABITAT ENHANCEMENT AREAS: 39,126 SF± (0.90 ACRES)
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OFF-SITE TRACT: 21,168 SF± (0.49 ACRES±) *SEE FIGURE 9

TREES TO BE REMOVED

DRIPLINES FOR OREGON WHITE OAK TREES SHOWN WERE DELINEATED BY AKS CERTIFIED ARBORISTS.

SCALE: 1"= 40 FEET

40 0 8 20 40

ORIGINAL PAGE SIZE: 11" x 17"

DATE: 03/15/2023

SITE PLAN, PRIORITY WHITE OAK REMOVAL, AND PRELIMINARY ON-SITE OAK MITIGATION AREAS

CAMAS MEADOWS SUBDIVISION CRITICAL AREAS ASSESSMENT

FIGURE 8A

AKS ENGINEERING & FORESTRY, LLC
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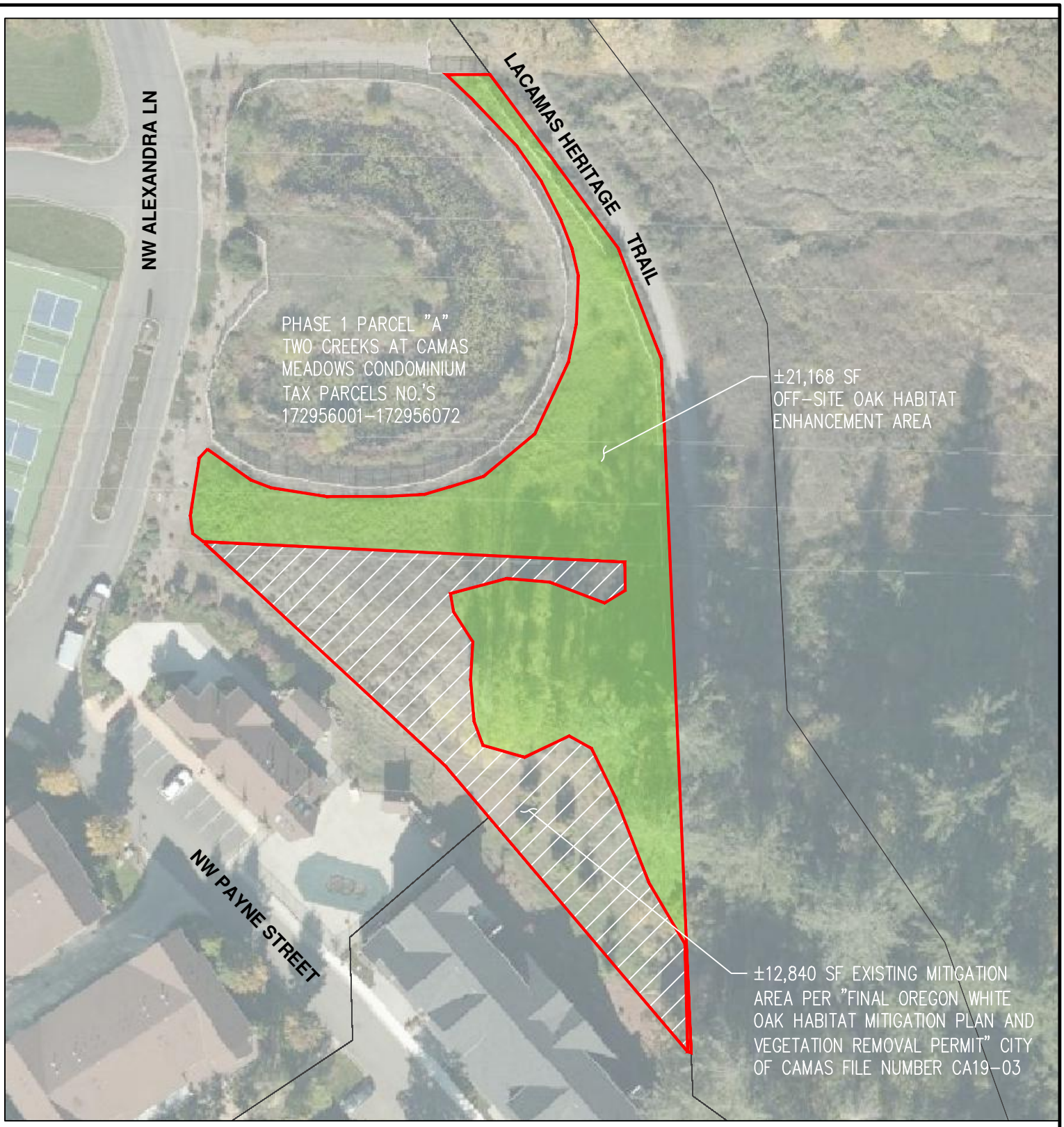
VANCOUVER, WA 98682
360.882.0419 WWW.AKS-ENG.COM

DRWN: RAS
CHKD: SAR
AKS JOB: 9030

DWG: 9030 CAA SITE PLAN | FIGURE 8A



NOTE: AERIAL DERIVED FROM MAXAR MICROSOFT DATABASE (2022).
PROPERTY BOUNDARIES FROM AKS LAND SURVEY WITH SUB-METER ACCURACY.
CA19-03 EXISTING MITIGATION AREA DIGITIZED IN CAD WITH ±5 FEET ACCURACY.

DATE: 03/15/2023

SCALE: 1"=60 FEET

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ORIGINAL PAGE SIZE: 8.5" x 11"

OFF-SITE OAK MITIGATION AREA (TWO CREEKS AT CAMAS MEADOWS CONDOMINIUM OPEN SPACE TRACT)	FIGURE 9
AKS ENGINEERING & FORESTRY, LLC 9600 NE 126TH AVE, STE 2520 VANCOUVER, WA 98682 360.882.0419 WWW.AKS-ENG.COM	DRWN: RAS CHKD: SAR AKS JOB: 9030

DWG: 9030 OAK MITIGATION-OFFSITE | FIGURE 2